



$D \rightarrow d \mid DD$

$A \rightarrow AA \mid a$

$C \rightarrow c$

$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$

B → b

$M \rightarrow BY \mid BC$

$$Y \rightarrow MG$$

$$X \rightarrow MD$$

$D \rightarrow d \mid DD$

$A \rightarrow AA \mid a$

$C \rightarrow c$

$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$

B → b

$M \rightarrow BY \mid BC$

$$Y \rightarrow MG$$

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$Y \rightarrow MC$

$X \rightarrow MD$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}							
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}							
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}							
$i = 2$	a		{A}						
$i = 3$	b		{B}						
$i = 4$	b		{B}						
$i = 5$	c		{C}						
$i = 6$	c		{C}						
$i = 7$	d		{D}						
$i = 8$	d		{D}						

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}							
$i = 2$	a		{A}						
$i = 3$	b		{B}						
$i = 4$	b		{B}						
$i = 5$	c		{C}						
$i = 6$	c		{C}						
$i = 7$	d		{D}						
$i = 8$	d		{D}						

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

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$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}							
$i = 2$	a		{A}						
$i = 3$	b		{B}						
$i = 4$	b		{B}						
$i = 5$	c		{C}						
$i = 6$	c		{C}						
$i = 7$	d		{D}						
$i = 8$	d		{D}						

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

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$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}							
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

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		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
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$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{B}Y \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

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$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}							
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

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$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{B}Y \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

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		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

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$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

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$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}							
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$

$A \rightarrow AA \mid \text{a}$

$C \rightarrow \text{c}$

$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$

$B \rightarrow \text{b}$

$M \rightarrow BY \mid BC$

$Y \rightarrow MC$

$X \rightarrow MD$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}							
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$

$A \rightarrow AA \mid a$

$C \rightarrow c$

$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$

$B \rightarrow b$

$M \rightarrow BY \mid BC$

$Y \rightarrow MC$

$X \rightarrow MD$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}							
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $A \rightarrow AA \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$

$A \rightarrow AA \mid \text{a}$

$C \rightarrow \text{c}$

$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$

$B \rightarrow \text{b}$

$M \rightarrow BY \mid BC$

$Y \rightarrow MC$

$X \rightarrow MD$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}						
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}						
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}		{}	{}				
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}		{}	{}				
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}		{}	{}				
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}		{}	{}				
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}		{}	{}				
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}						
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}						
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}						
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}					
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}					
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}		{}	{}	{}			
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}					
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{red}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	$\mathsf{a}$	$\{A\}$	$\{A\}$	$\{\}$	$\{\}$				
$i = 2$	$\mathsf{a}$	$\{A\}$	$\{\}$	$\{\}$	$\{\}$				
$i = 3$	$\mathsf{b}$	$\{B\}$	$\{\}$	$\{\}$	$\{M, S\}$				
$i = 4$	$\mathsf{b}$	$\{B\}$	$\{M, S\}$	$\{Y\}$	$\{\}$				
$i = 5$	$\mathsf{c}$	$\{C\}$	$\{\}$	$\{\}$					
$i = 6$	$\mathsf{c}$	$\{C\}$	$\{\}$	$\{\}$					
$i = 7$	$\mathsf{d}$	$\{D\}$	$\{D\}$						
$i = 8$	$\mathsf{d}$	$\{D\}$							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	$\mathsf{a}$	$\{A\}$	$\{A\}$	$\{\}$	$\{\}$				
$i = 2$	$\mathsf{a}$	$\{A\}$	$\{\}$	$\{\}$	$\{\}$				
$i = 3$	$\mathsf{b}$	$\{B\}$	$\{\}$	$\{\}$	$\{M, S\}$				
$i = 4$	$\mathsf{b}$	$\{B\}$	$\{M, S\}$	$\{Y\}$	$\{\}$				
$i = 5$	$\mathsf{c}$	$\{C\}$	$\{\}$	$\{\}$					
$i = 6$	$\mathsf{c}$	$\{C\}$	$\{\}$	$\{\}$					
$i = 7$	$\mathsf{d}$	$\{D\}$	$\{D\}$						
$i = 8$	$\mathsf{d}$	$\{D\}$							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{green}{X} \rightarrow \textcolor{red}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}		{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}		{}					
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}							
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}						
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $A \rightarrow AA \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}				
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{green}{X} \rightarrow \textcolor{red}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}				
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}		{}	{}	{}	{}		
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{blue}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}				
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}		{}	{}			
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}		{}	{}			
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}		{}	{}			
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\mathbf{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}		{}	{}			
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{blue}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\mathbf{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}				
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $A \rightarrow AA \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{} (Red)	{} (Green)			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{} (Red)	{} (Green)			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{} (Red)	{} (Green)			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{} (Red)	{} (Green)			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{} (Red)	{} (Green)			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}			
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}					
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{red}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow d \mid DD$$

$$A \rightarrow AA \mid a$$

$$C \rightarrow c$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow b$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{blue}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}			
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow d \mid DD$$

$$A \rightarrow AA \mid a$$

$$C \rightarrow c$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow b$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{green}{X} \rightarrow \textcolor{red}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}			
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow d \mid DD$$

$$A \rightarrow AA \mid a$$

$$C \rightarrow c$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow b$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $A \rightarrow AA \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}		
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow d \mid DD$$

$$A \rightarrow AA \mid a$$

$$C \rightarrow c$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow b$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}		
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	<span style="background-color: #ffcccc;">{A}</span>	{}	{}	{}	{}	{S}	<span style="background-color: #ccffcc;">{}</span>	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	<span style="background-color: #ccccff;">{X}</span>		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{blue}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{red}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{S}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{S}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{S}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{S}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{S}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}		{}	{}	{}	{}	{S}	{S}
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{red}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathbf{d} \mid DD$$

$$A \rightarrow AA \mid \mathbf{a}$$

$$C \rightarrow \mathbf{c}$$

$$\textcolor{blue}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \mathbf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow d \mid DD$$

$$A \rightarrow AA \mid a$$

$$C \rightarrow c$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow b$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{red}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \mathsf{d} \mid DD$$

$$A \rightarrow AA \mid \mathsf{a}$$

$$C \rightarrow \mathsf{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{blue}{BC} \mid AX \mid AD$$

$$B \rightarrow \mathsf{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$
$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$
$$C \rightarrow \text{c}$$
$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$
$$B \rightarrow \text{b}$$
$$M \rightarrow BY \mid BC$$
$$Y \rightarrow MC$$
$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{DD}$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow d \mid DD$  $A \rightarrow AA \mid a$  $C \rightarrow c$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow b$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{blue}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$D \rightarrow \text{d} \mid DD$  $\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$  $C \rightarrow \text{c}$  $S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$  $B \rightarrow \text{b}$  $M \rightarrow BY \mid BC$  $Y \rightarrow MC$  $X \rightarrow MD$ 

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{blue}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$\textcolor{blue}{D} \rightarrow \text{d} \mid \textcolor{red}{D}D$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$\textcolor{red}{A} \rightarrow \textcolor{red}{AA} \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid \textcolor{red}{BY} \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid \textcolor{red}{BC} \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid \textcolor{red}{AX} \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$\textcolor{green}{S} \rightarrow \epsilon \mid BY \mid BC \mid AX \mid \textcolor{red}{AD}$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{red}{M} \rightarrow \textcolor{blue}{BY} \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$\textcolor{green}{M} \rightarrow BY \mid \textcolor{red}{BC}$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$\textcolor{red}{Y} \rightarrow \textcolor{red}{MC}$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$\textcolor{red}{X} \rightarrow \textcolor{blue}{MD}$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							

$$D \rightarrow \text{d} \mid DD$$

$$A \rightarrow AA \mid \text{a}$$

$$C \rightarrow \text{c}$$

$$S \rightarrow \epsilon \mid BY \mid BC \mid AX \mid AD$$

$$B \rightarrow \text{b}$$

$$M \rightarrow BY \mid BC$$

$$Y \rightarrow MC$$

$$X \rightarrow MD$$

		$j = 1$	$j = 2$	$j = 3$	$j = 4$	$j = 5$	$j = 6$	$j = 7$	$j = 8$
$i = 1$	a	{A}	{A}	{}	{}	{}	{}	{S}	{S}
$i = 2$	a	{A}	{}	{}	{}	{}	{S}	{S}	
$i = 3$	b	{B}	{}	{}	{M, S}	{X}	{X}		
$i = 4$	b	{B}	{M, S}	{Y}	{}	{}			
$i = 5$	c	{C}	{}	{}	{}				
$i = 6$	c	{C}	{}	{}					
$i = 7$	d	{D}	{D}						
$i = 8$	d	{D}							