3-8.

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<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>S5</th>
<th>S4</th>
<th>S3</th>
<th>S2</th>
<th>S1</th>
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\[ S_0 = C \]
\[ S_1 = \overline{C} \]
\[ S_2 = AB\overline{C} + A\overline{B}C \]
\[ S_3 = ABC + A\overline{B}C \]
\[ S_4 = \overline{AB} + AC \]
\[ S_5 = AB \]
3-10.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>W</th>
<th>X</th>
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\[ W = A + B + C \]
\[ X = \overline{BC} + BC \]
\[ Y = \overline{C} \]
\[ Z = D \]

3-21.

\[ E = G_1 \overline{G_2} A \cdot \overline{G_2} B \]

\[ Y_0 = \overline{ABC} \overline{E} \]
\[ Y_1 = \overline{ABC} \overline{E} \]
\[ Y_2 = \overline{ABC} \overline{E} \]
\[ Y_3 = \overline{ABC} \overline{E} \]
\[ Y_4 = \overline{ABC} \overline{E} \]
\[ Y_5 = \overline{ABC} \overline{E} \]
\[ Y_6 = \overline{ABC} \overline{E} \]
\[ Y_7 = \overline{ABC} \overline{E} \]

Except when \( G_1 = 1 \) and \( G_2 = 0 \), the outputs \( Y_0 \) to \( Y_7 \) are all 1s otherwise, they are 0.
3-46. | ABCD | E  
---|---|---
      | 0 0 0 0 | 0  
      | 0 0 0 1 | 0  
      | 0 0 1 0 | 1  
      | 0 0 1 1 | 0  
      | 0 1 0 0 | 1  
      | 0 1 0 1 | 0  
      | 0 1 1 0 | 1  
      | 0 1 1 1 | 0  
      | 1 0 0 0 | 1  
      | 1 0 0 1 | 1  
      | 1 0 1 0 | 1  
      | 1 0 1 1 | 0  
      | 1 1 0 0 | 0  
      | 1 1 0 1 | 0  
      | 1 1 1 0 | 0  
      | 1 1 1 1 | 1  

![MUX Diagram](image)