
2. Write the truth table for this circuit:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

3. Give a boolean logic expression (no circuit needed) in sum-of-products (DNF) form where the minimal representation is made up of the following:

   (a) Four essential prime implicants of 4 literals.
   (b) An essential prime implicant of 2 literals, and one of 4 literals.

Recall that an essential prime implicant is a prime implicant that covers a True (1) output of the function that no combination of other prime implicants is able to cover.

4. Show how to implement the boolean function $F$ using only NAND gates:

   $$F(A, B, C, D, X, Y) = (A \cdot B) + (C \cdot D) + (X \cdot Y)$$