1. Consider the circuit in Fig. 1. Use D-algorithm to perform ATPG for the stuck-at 1 fault on line N. To simplify the ATPG process, whenever there is a choice, you first select the top input. For example, to justify M=1 in Fig. 1, you first justify I=1.

To simplify the description of the process, try to follow the steps presented in the slides as:

<table>
<thead>
<tr>
<th>Decision</th>
<th>Implication</th>
<th>Comments</th>
</tr>
</thead>
</table>

You also have to give the decision tree.

2. Repeat question 1 using PODEM.

To simplify the description of the process, try to follow the steps presented in the slides as:

<table>
<thead>
<tr>
<th>Objective</th>
<th>PI Assignment</th>
<th>Implication</th>
<th>D-Frontier</th>
</tr>
</thead>
</table>

You also have to give the decision tree.

3. Repeat question 1 using FAN.

To simplify the description of the process and to help the TA to grade your answer, you MUST list the process step by step. Here, I give an example:

Step 1: To activate the fault, we have current objective=(B1, 0).

Perform M-backtracing using (B1, 0), we assign B=0.
Perform implication: we get $B_2 = \overline{D}$, $B_3 = \overline{D}$, and $B_4 = 0$.

$D$-frontier=$\{F, G\}$.

You also have to give the decision tree.

![Decision Tree Diagram]

Fig. 1