Name: _____   **Roll No.:** _____

Time allowed: 10 minutes
Maximum Marks: 10

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1. A sequential circuit with two D flip-flops A and B, one input X, and one output Z is specified by the following input equations:

$D\_A = A + BX$

$D\_B = (B \oplus X) + AB$

$Z = AB + AX$

(a) Draw the logic diagram of the circuit.   [3]

(b) Derive the state table.   [3]

(c) Draw the state diagram.   [3]

(d) Briefly describe the functionality of the circuit in your own words.   [1]