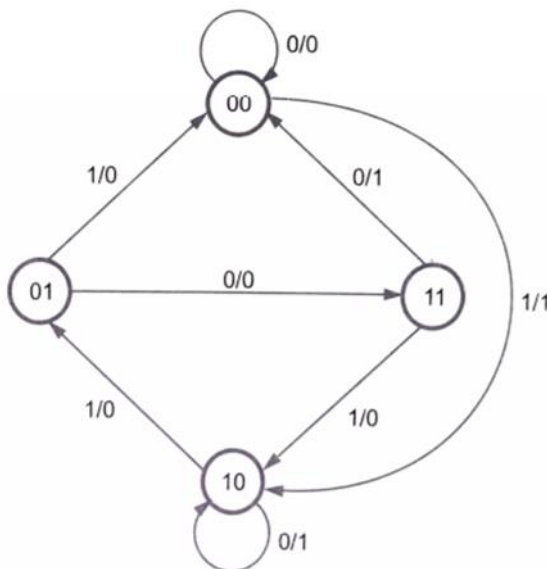


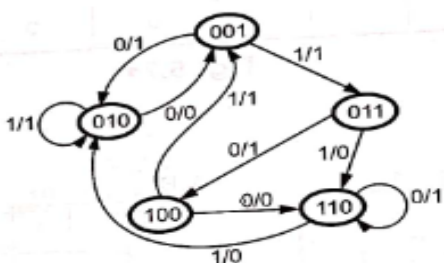
Unit IV – Sequential Logic Circuit

Part – B

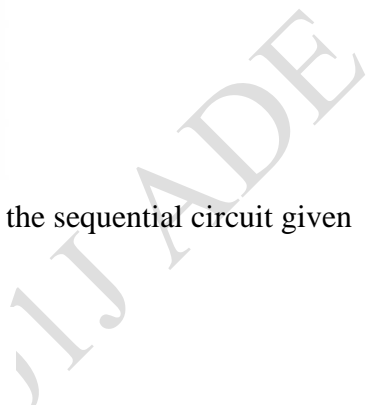
1. Design a T flip – flop using logic gates, write the truth table and write the truth table, characteristics equation, transition table, state table and state diagram.
2. Design a SR flip – flop using logic gates, write the truth table and write the truth table, characteristics equation, transition table, state table and state diagram.
3. Design a D flip – flop using logic gates, write the truth table and write the truth table, characteristics equation, transition table, state table and state diagram.
4. Design a J-K flip - flop using NAND gates, write the truth table and explain its all possible cases.
5. Explain master slave JK flip flop
6. A sequential circuit has one input and one output. The state diagram is shown in figure. Design the sequential circuit using SR flipflop.



7. Design a sequential circuit for the state diagram shown in figure using JK flip flop



8. Construct the transition table, state table, state diagram for the Moore sequential circuit shown.



The diagram shows a T flip-flop implemented with two NAND gates, one OR gate, and a D flip-flop. The input α is connected to the top input of the first NAND gate and the top input of the second NAND gate. The output of the first NAND gate is connected to the top input of the OR gate. The output of the second NAND gate is connected to the bottom input of the OR gate. The output of the OR gate is connected to the T input of the D flip-flop. The Q output of the D flip-flop is connected to the top input of the first NAND gate. The \bar{Q} output of the D flip-flop is connected to the bottom input of the second NAND gate. The clock input of the D flip-flop is connected to a clock signal.



$$Z=Y$$

11. An asynchronous sequential circuit is described by the excitation and output function,

$$Z = Y$$

12. An asynchronous sequential circuit is described by the following excitation and output function

$$X_0^+ = X_0 I_0 I_1 + X_1 \bar{I}_0$$

$$Z = X_0 X_1 I_0$$

- i) Draw the logic diagram of the circuit,
- ii) Derive the transition table, flow table and output map
- iii) Describe the behavior of the circuit

13.

An asynchronous sequential circuit is described by the excitation and output functions, $B = (A_1' B_2) b + (A_1 + B_2)$ $C = B$

- a) Draw the logic diagram of the circuit.
- b) Derive the transition table, output map and flow table.

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