

**Question 1.**

[ 4 x 5 ]

Write the derivation and draw the logic circuit diagram to realize the XOR and XNOR gate using NOR gate only.

**Question 2.**

What is Half-adder? Draw the truth table and write the Boolean expression for the sum and carry using NAND gates only. Also draw the logic circuit diagram.

**Question 3.**

What is Full-adder? Draw the truth table and write the Boolean expression for the sum and carry. Also draw the logic circuit diagram.

**Question 4.**

How does an Encoder differ from a Decoder? Draw the logic circuit diagram of a Octal to binary encoder.

**Question 5.**

How is multiplexer different from decoder? Draw the circuit diagram for 8:1 multiplexer.

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