

2123
B.E. (CSE), First Semester
ESC-X06: Digital Electronics

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

- a) What is a logic gate? What does it do?
- b) Differentiate between Maxterm and Minterm.
- c) Why is memory not required in a combinational logic circuit?
- d) Which flip flops are used in shift- register? Can a shift register be used as a counter? Explain.
- e) Name some of the commonly used series of TTL. (5x2)

UNIT - I

- II. a) Convert $(0.65625)_{10}$ to an equivalent base-2 number.
b) How can you connect a NAND gate to get an inverter?
c) Differentiate between Sum of Products and Product of Sum forms. (4,4,2)
- III. a) Obtain 16:1 multiplexer using two 8:1 multiplexer.
b) Design a combinational circuit whose input is a four bit number and output the two's complement of the input number. (2x5)
- IV. Write short notes on the following:-
a) Quine-McCluskey Method
b) Edge triggered flip flop
c) T flip flop (4,3,3)

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UNIT - II

- V. a) Design a 3-bit synchronous counter using J-K FLIP-FLOPs.
b) Describe the Universal shift register and Parallel in Parallel out shift registers.
c) Define propagation delay. (4,4,2)
- VI. a) Design a divide-by-5 ripple counter using FLIP-FLOPs.
b) Explain the circuit diagram and working of ECL logic families in detail. (4,6)
- VII. Write short notes on the following:-
a) Binary ladder D/A converter.
b) Characteristics of ADC
c) Applications of shift registers. (4,3,3)

x-x-x