Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (Software Engineering) (Sem.–3)

# DIGITAL ELECTRONICS

Subject Code : BTES-301-18

M.Code : 78674

Time : 3 Hrs. Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

## SECTION-A

**Write briefly :**

1) Draw the logic symbol and truth table of XNOR gate.

2) Write down the significance of excess-3 code.

3) What do you mean by ASCII? Explain.

4) Compare Boolean algebra and ordinary algebra.

5) Draw the logic symbol and truth table of D Flip Flop.

6) Differentiate between edge and level triggering.

7) Differentiate between synchronous and asynchronous counters.

8) What do you mean by resolution and accuracy of D/A converters? Explain.

9) Compare RAM and ROM.

10) Discuss the significance of sample and hold circuit.

## SECTION-B

11) Convert 357.24 octal number to decimal number, hexadecimal and binary.

12) Two 4 bit BCD numbers A0 A1 A2 A3 and B0 B1 B2 B3 are required to be added, resulting in a BCD number. What modifications/alterations are required to be made in the circuit of 4-bit binary adder? Discuss. Mention clearly the assumptions made, if any.

13) For a 5-bit resistive divider, determine the following :

a) The weight assigned to the LSB;

b) The weight assigned to the second and third LSB;

c) The change in output voltage due to a change in the LSB, the second LSB, and the third LSB;

d) The output voltage for a digital input of 10101. Assume 0 = 0 V and 1 = + 10 V.

14) To issue an insurance policy an applicant must fulfil the following requirements. The applicant must be :

- A married female 25 years old or over, or
- A female under 25, or
- A married male under 25 who has not been involved in a car accident, or
- A married male who has been involved in a car accident, or
- A married male 25 years or over who has not been involved in a car accident.

Find the logical expression which assumes a value 1 whenever the policy is issued. Realize the circuit using the minimum number of gates.

15) Draw the K-map of the following expression and obtain the minimal SOP form. The expression is $ABCD + A\overline{C} + CD + A\overline{B}C + ABC$.

## SECTION-C

16) Draw the logical circuit diagram and explain the working of successive approximation and dual slope analog to digital convertors.

17) Design a MOD-9 synchronous counter using T and JK flip flops.

18) Explain :

i) Shift registers

ii) NAND and NOR as universal gates

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**