

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 :
- The weight assigned to the LSB;
 - The weight assigned to the second and third LSB;
 - The change in output voltage due to a change in the LSB, the second LSB, and the third LSB;
 - The output voltage for a digital input of 10101. Assume $0 = 0\text{ V}$ and $1 = +10\text{ V}$.
- 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 $ABCD + \bar{A}\bar{C} + CD + \bar{A}\bar{B}C + ABC$.

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 :
- Shift registers
 - 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.