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

Total No. of Questions : 18

B.Tech. (CSE/IT) (2018 Batch) (Sem.–3)

DIGITAL ELECTRONICS

Subject Code : BTES-301-18

M.Code : 76435

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. Perform the subtraction 1001_2-1110_2 using 1's complement method of subtraction.

2. Convert 38_{16} hexadecimal number to binary.

3. Convert the BCD number 00011000 to decimal number.

4. Write the truth table of 3-input OR gate.

5. Give the functional difference between a NAND gate and a negative OR gate.

6. Construct a truth table for the given Boolean expression AB+BC.

7. Give the comparison between synchronous & Asynchronous sequential circuits.

8. Determine the resolution of the output from a DAC that has a 12-bit input.

9. What is the difference between static RAM and dynamic RAM?

10. Draw the logic diagram for SR latch using two NOR gates.

SECTION-B

11. Using the Boolean Algebra, simplify the expression:

$$\left(A+\overline{A}\right)\left(AB+AB\overline{C}\right)$$

12. Use a Karnaugh map to simplify the function to its minimum sum of product form:

$$X=\overline{\overline{A}BC\overline{D}}+\overline{\overline{A}B}C\overline{D}+A\overline{BC\overline{D}}+\overline{A}CD+A\overline{B}C\overline{D}$$

13. Design a Excess-3 to BCD code converter using minimum number of NAND gates.

14. Explain the operation of master-slave J-K flip flop. Give its advantages.

15. Design a 4-bit asynchronous up/down counter and explain its working with the help of timing diagram.

SECTION-C

16. Simplify using K-map

    f(ABCD) = ΠM(l,3,5,7,8,9,l0,13,15) and implement using NAND/NOR logic.

17. a) Explain how a 4-bit R/2R register DAC works?

    b) Design and working of a synchronous MOD- 6 counter using JK FF.

18. Write short notes on **any two** :

    a) PLA

    b) Ring Counter

    c) BCD to 7 segment decoder

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.