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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:

$$(A + \overline{A})(AB + ABC)$$

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

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

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

$$f(ABCD) = \Pi M(1,3,5,7,8,9,10,13,15) \text{ and implement using NAND/NOR logic.}$$

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.**