

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:

$$(A + \bar{A})(AB + ABC\bar{C})$$

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

$$X = \overline{ABCD} + \overline{ABC\bar{D}} + \overline{AB\bar{C}D} + \overline{ACD} + \overline{ABC\bar{D}}$$

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.