Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 07

B.Sc.(IT) (2015 & Onward) (Sem.–2)

DIGITAL CIRCUITS & LOGIC DESIGNS

Subject Code : BSIT-204

M.Code : 72727

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 SIX questions carrying TEN marks each and students have to attempt any FOUR questions.**

SECTION-A

1) Answer briefly :

a) When will be NAND gate output low? Write complete table.

b) What is the Binary equivalent of the decimal number 368?

c) What is the Decimal Equivalent of Hex number 1A53?

d) Convert (9B2 - 1A) H to its decimal equivalent.

e) What is difference between latch and flip-flop?

f) What is a Multiplexer?

g) Given the two binary numbers X=1010100 and Y=1000011, perform the subtraction X-Y, Y-X using l's complement.

h) State the commutative property of Boolean algebra.

i) Prove that ABC + ABC' + AB'C + A'BC = AB + AC + BC

j) State the limitations of Karnaugh Map.

SECTION-B

2. What is a Logic gate? Give the classification of logic families. Which gates are called as the universal gates? What are its advantages?

3. a) Explain about Boolean expression. Simplify the Boolean expression

   $F = C(B + C)(A + B + C)$.

   b) Explain SOP and POS forms in detail.

4. What is K-map? Simplify the following expression into sum of products using Karnaugh map

   $F(A,B,C,D) = \Sigma(1,3,4,5, 6, 7, 9, 12, 13)$.

5. Explain Flip Flop. Show how a JK flip-flop can be constructed using a T flip-flop and other logic gates.

6. What is a Counter? What is the difference between Asynchronous counter and Synchronous counter?

7. What is the working of multiplexer and demultiplexer? What are their applications and advantages?

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.