

Roll No.

Total No. of Questions : 7

Total No. of Pages : 02

B.Sc. (IT) (Sem.-2nd)

DIGITAL ELECTRONICS FUNDAMENTALS

Subject Code : BS-102

Paper ID : [B0405]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

- 1. SECTION-A is COMPULSORY.**
- 2. Attempt any FOUR questions from SECTION-B.**

SECTION-A

(10 × 2 = 20 Marks)

1. Write a short note on :

- (a) Define 2's complement of a binary number.
- (b) State the basic laws governing simplification using K-map.
- (c) Add hexadecimal numbers ABC + BCD.
- (d) Give truth table of Ex-NOR gate.
- (e) Difference between MUX and DEMUX.
- (f) To add two 4 bit binary numbers, how many Half Adders and Full Adders are needed ?
- (g) Write any three applications of flip flops.
- (h) Compare SOP and POS forms.
- (i) What is a memory cell ?
- (j) What do you mean by term "Random Access" with reference to memories

SECTION-B**(4 × 10 = 40 Marks)**

2. Convert :
- (a) 153.53 from decimal to octal. (2)
 - (b) 2B.C4 from hexadecimal to decimal. (2)
 - (c) 2AB from hexadecimal to binary. (2)
 - (d) 545 from octal to hexadecimal. (2)
 - (e) 127.54 from octal to decimal. (2)
3. What are Universal gates ? Realize various Logic gates using Universal gates only.
4. Explain Full Adder. Give design of a Full Adder. Realize a full Adder using NAND gates only.
5. (a) Simplify : $F = AB + A(B+C) + B(B+C)$.
- (b) Simplify using K-map : $F(w,x,y,z) = \sum (01,2,4,5,6,8,9,12,13,14)$
6. Discuss in detail classification and characteristics of memories.
7. How can you realize edge triggered JK flip flop from an SR flip flop? Give its truth table and explain how race around problem is removed in it?