Exam.Code:0906
Sub. Code: 6677

1058

B.E. (Computer Science and Engineering),
Second Semester
CS-203: Digital Electronics and Logic Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.*

x-x-x

1. (a) Differentiate between combinational and sequential circuits.

(b) Explain universal gates. Design AND gate using NAND gates only.

(c) Differentiate between multiplexer and demultiplexer.

(d) What are the applications of 'D' flip-flop?

(e) What are programmable logic devices? **(5*2=10)**

SECTION A

2.(a) Explain two input ECL OR/NOR gate with suitable circuit diagrams. **(5)**

(b) Give comparison of TTL, ECL and MOS on the basis of performance characteristics. **(5)**

3. Minimize the following using K-map and implement using minimum number of NAND gates only:

$$F = \pi M(1,5,8,11,13,14,17,21,23,27,31) \cdot d(4,7,18,30)$$

(10)

4. (a) Explain 3-bit Gray to Binary code converter with the help of suitable circuit diagram. **(6)**

(b) Draw and explain full adder circuit. **(4)**

SECTION B

5. (a) Differentiate between J-K and R-S flip-flop. Explain the race-around condition in J-K flip-flop.

(b) Design synchronous counter using T flip-flop to count the following sequence

0,5,6,3,7,4,1

Avoid lockout condition. **(5 + 5)**

6. (a) What is a comparator? Design 4-bit magnitude comparator.

(b) Explain 4-bit bi-directional shift register with circuit diagram. **(5 + 5)**

7. Write a short note on

(a) FPGA and its applications.

(b) State reduction and State assignment. **(5 + 5)**

x-x-x