Exam.Code:0906
Sub. Code: 6677

1019
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 Unit.*

x-x-x

I. Attempt the following:-

a) Differentiate between encoder and decoder circuits.

b) Explain universal gates. Design OR gate using NOR gates only.

c) What are prime implicants and essential prime implicants?

d) What are the applications of shift registers?

e) Give difference between asynchronous and synchronous counters? (5x2)

UNIT – I

II. a) Explain two input TTL NAND gate with suitable circuit diagrams.

b) Design and explain BCD to 7-segment decoder. (5,5)

III. a) What is carry look-ahead adder? Explain with the help of suitable circuit diagram.

b) What is MOS family? Draw and explain CMOS NOR gate circuit. (5,5)

IV. Minimize the following using K-map and implement using minimum number of NAND gates only:
$F = \pi M(1,5,8,11,13,14,17,21,23,27,31).\ d(4,7,18,30)$ (10)

UNIT – II

V. a) Differentiate between SISO and SIPO shift registers.

b) Design 3-bit up/down synchronous counter using D flip-flops. (5,5)

VI. a) What is the difference between latch and flip-flop? Explain J-K flip-flop with circuit diagram.

b) What is a comparator? Design 4-bit magnitude comparator. (5,5)

P.T.O.

VII. Write short notes on the following:-

a) Ring and Johnson counters

b) Multiplixer and Demultiplexer (5,5)

x-x-x