Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 07

B.Sc.(IT) (2014 Batch) (Sem.–2)

DIGITAL ELECTRONICS FUNDAMENTALS

Subject Code : BS-102

M.Code : 12507

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION 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 a student has to attempt any FOUR questions.**

SECTION-A

Q1. Answer briefly :

a) Draw and explain Gray to binary circuit. Give applications of Gray code.

b) Convert the following binary number to decimal: 101.01

c) Multiply in hexadecimal system: 6A x DD.

d) Distinguish between decoder and demultiplexer. Give their application.

e) Give the example of Octal number addition and substraction.

f) What are Boolean laws on the basis of which K-Map is designed?

g) Draw the excitation table of JK flip flop. Connect it to behave as T flip flop.

h) Distinguish between Asynchronous versus Synchronous Counter.

i) What do you understand by Sequential memory?

j) Draw the circuit symbol and internal circuit of Edge triggered flip flop. Give its applications.

SECTION-B

Q2. Design a JK counter that goes through the states: 3, 4, 6, 7, 3, ….

Q3. Draw the connection/circuit diagram for constructing 16:1 multiplexer using multiple 4:1 multiplexers.

Q4. Draw and explain circuit of 4-bit Johnson and Ring Counters.

Q5. Minimize the following POS function and implement using NOR gates,

$f = \Sigma m\,(0, 2, 6, 10, 11, 12, 13) + d\,(3, 4, 5, 14, 15)$

Q6. Reduce the following Boolean expressions :

a) $\overline{(A + \bar{B}C)}\,(A\bar{B} + \overline{ABC})$

b) $W\bar{X}\,(W + Y) + WY\,(\bar{W} + \bar{X})$

Q7. Solve the expression $f = \Sigma\, m\ (0,2,\ 3,\ 6,\ 7\ ,8,\ 9,10,13)$ using Quine-Mc Cluskey minimization technique.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.