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

Total No. of Questions : 09

B.Tech.(EIE) (2011 & Onwards) (Sem.–4)

DIGITAL ELECTRONICS

Subject Code : EC-204

Paper ID : [A0307]

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 FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) Represent binary number 1101.101 in powers of 2 and find its decimal equivalent.

b) Convert gray code 101011 into its binary equivalent.

c) Subtract $(111001)_2$ from $(101011)_2$ using 2's compliment method.

d) What do you mean by binary decoder?

e) Design 1:8 demultiplexer using two 1:4 demultiplexer.

f) Give the comparison between ROM and RAM.

g) What is race around condition in J-K flip-flops?

h) The t_{pd} for each flip flop is 50 ns determine the maximum operating frequency MOD-32 ripple counter.

i) Give the specifications of A/D converters.

j) Give the classification of memories.

SECTION-B

2. Write the minimized expression using k-map of the following expression

   $y=\pi M(1,2,4,7,8)$

   and implement using NAND Gates.

3. Explain the need of master J-K flip-flop and how it works.

4. Design a simple BCD-to-seven segment decoder.

5. Explain how a 4-bit R/2R register DAC works.

6. Draw the circuit diagram of a 4-bit serial in / serial out shift register using D flip- flops. Also draw its timing diagram.

SECTION-C

7. a) Draw the schematic of RTL and explain its operation.

   b) Explain the characteristics of memories.

8. a) Explain the normal mode of operation of PROM.

   b) Explain the operation of successive approximation type of ADC.

9. Write short notes on **any two** :

   a) Dual Slope A / D.

   b) CCD memory.

   c) Gray code and Excess-3-code.