

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE)(2012 Onwards)/(Electrical & Electronics Engg.) (2011 Onwards)  
B.Tech. (Electronics & Electrical Engg.) (2012 to 2017)  
(Sem.-4)

### DIGITAL ELECTRONICS

Subject Code : BTEC-404

M.Code : 57103

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 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) What is the significance of digital electronics in the modern world? Discuss.
- b) What do you mean by a parity bit? Explain its importance.
- c) Differentiate between multiplexer and an encoder.
- d) List how Boolean algebra is different from ordinary algebra.
- e) What do you mean by negative logic? Discuss.
- f) Compare RAM and ROM.
- g) What do you mean by race around condition? Explain.
- h) Discuss the significance of D flip-flop.
- i) List the various characteristics of digital ICs.
- j) List the advantages and disadvantages of counter type A/D converter.

## SECTION-B

2. Convert the 11101011011.10101 binary numbers to decimal, hexadecimal, octal and Gray code.
3. Draw and explain the circuit for half adder and full adder.
4. Explain the working of a RS flip-flop. Also mention its advantages and disadvantages.
5. For a 5-bit resistive divider D/A converter, determine the following :
  - a) The weight assigned to the LSB;
  - b) The weight assigned to the second and third LSB;
  - c) The change in output voltage due to a change in the LSB, the second LSB, and the third LSB;
  - d) the output voltage for a digital input of 10101. Assume  $0 = 0\text{ V}$  and  $1 = +10\text{ V}$ .
6. It is desired to combine several  $1\text{K} \times 8$  PROMS to produce a total capacity of  $4\text{K} \times 8$ . How Many PROM chips are required? Show the arrangement. Also compare RAM and ROM.

## SECTION-C

7. Discuss the working of parallel and successive approximation type A/D converters.
8. Reduce the expression  $F(W, X, Y, Z) = \sum m(0,1,5,7,8,10,14,15)$  to the simplest possible form using Quine-McClusky method and verify it using K- map method
9. Explain the following :
  - a) TTL
  - b) Decision control structure using VHDL