Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EE)/(Electrical & Electronics)/(Electronics & Electrical)(2011 onwards)
B.Tech.(Electrical Engineering & Industrial Control) (2012 Onwards)
(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 has to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students has to attempt any TWO questions.

SECTION-A

1. Answer briefly :

a) Convert $(101110)_2$ to hexadecimal and octal number.

b) Express 10101100 BCD code into gray code.

c) Define the race around condition in flip flop.

d) Draw the logic diagram of half adder.

e) State any two applications of shift register.

f) Why TTL is preferred over DTL?

g) What do you mean by priority encoder?

h) Compare the function of decoder and encoder.

i) What is the advantage of the R-2R ladder DAC over the weighted resister type DAC?

j) Draw CMOS circuit for NOR gate.

SECTION-B

2. Implement $Y = (A + C)(A + \bar{D})(A + B + \bar{C})$ using NOR gates only.

3. Simplify using Boolean laws and draw the logic diagram for the given expression.

$$F = \overline{ABC} + \overline{AB}C + \bar{A}B\bar{C} + A\overline{BC} + A\bar{B}C$$

4. Minimize the following function using K-map

$$F(A, B, C, D) = \sum m(0,1,7,8,13,15) + \phi(2,6,10,11)$$

5. Explain the Master-slave JK flip-flop with the help of circuit diagram and waveforms

6. Explain the different modeling styles in VHDL with suitable examples.

SECTION-C

7. a) Use a 8 × 1 MUX to implement the logic function

$$F = \sum m(0,1,2,3,4,10,11,14,15)$$

b) Draw and explain the working of a synchronous mod-3 counter.

8. a) Compare TTL, ECL, RTL, DCTL and DTL w.r.t. fan-in, fan-out and noise margin.

b) An 8-bit successive approximation converter (SAC) has a resolution of 15mV. What will its digital output be for an analog input of 2.65 V?

9. Write short notes on **Any Two :**

a) PLD

b) Ring Counters

c) Demultiplexers

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