

- NB : (1) Q. No. 1 is Compulsory. Attempt any three questions.
(2) Figures to the right indicate full marks.
(3) Assume suitable data if necessary

1. Answer the following (Any Four) 20
- (a) Convert : (i) $(FFFA)_{16} = (?)_8$
(ii) $(101.1101)_2 = (?)_{10}$
 - (b) Explain carry look ahead adder.
 - (c) Compare combinational and sequential logic circuits.
 - (d) Explain Race around condition and how it can be eliminated.
 - (e) What are ROM and RAM. Compare these two memories.
2. (a) (i) Construct Hamming code for BCD 0110 use even parity 10
(ii) Prove that : (i) $A [B + C \overline{(AB + AC)}] = AB$
(ii) $\overline{AB \cdot (C + D) \cdot AB} = \overline{A + B + C + D}$
- (b) Implement the following Boolean equation using single 8:1 MUX and few logic gates. $F(A,B,C,D) = \sum m(0,1,3,4,8,9,15)$ 10
3. (a) Design Decade ripple counter and draw timing diagram. 10
(b) Convert JK Flip-Flop to T Flip-Flop and D Flip-Flop. 10
4. (a) Minimize the following function using K-Map and implement using only universal gates. $F = \sum m(5,6,7,13,14,15)$ 10
(b) What is shift register? Explain the working of 4 bit universal shift register. 10
5. (a) Explain programmable Logic Devices. 10
(b) What is a function Hazard? How will you prevent Hazard. Explain. 10
6. Write a short note on : (Any Four) 20
- (a) Basic dynamic RAM cell
 - (b) ECL family
 - (c) Johnson Counter
 - (d) EEPROM
 - (e) Noise Margin, Fan-In, Fan Out, Propagation Delay time of IC's