

TIME: 03 Hrs

Maximum Marks:40

Note: Question no 1 is compulsory. Attempt any four from rest questions. Assume suitable missing data if any.

1. (a) What is De-Multiplexer? State its use.  
(b) Simplify the equation  $\bar{A}C(\bar{A}BD) + \bar{A}B\bar{C}D + A(\bar{B} + C)$   
(c) What is T flip-flop? Give the excitation table for T flipflop.  
(d) Differentiate between Synchronous counter & Asynchronous counter.  
4×2 =8
2. (a) What is EX-3 Code? Give the logic circuit for BCD to Ex-3 code converter.  
(b) Implement the logic function  $f(ABCD) = \sum(0,1,3,6,7,11,12,13,15)$  using 8:1 mux.  
2×4 =8
3. (a) What is Gray code ? Give the truth table for converting four bit Binary code to Gray code and obtain the logic expression.  
(b) With neat circuit diagram, explain one digit BCD addition.  
2×4 =8
4. (a) Design a synchronous counter for counting 7 to 0 and repeat. How it can be converted to an up counter?  
(b) Discuss the term PAL & PLA.  
2×4 =8
5. (a) With neat circuit diagram, explain the working of three bit Flash A/D converter.  
(b) Give the classification of logic family. Give the characteristics and specifications of TTL & CMOS logic families.  
2×4 =8
6. (a) What is EPROM and EEPROM? State their use and also compare them.  
(b) What is Priority encoder? Design a 2 bit Priority encoder.  
2×4 =8

END