MCA/D07
Computer Organization
MCA -102

Time : 3 Hours   MM:50

Note:- Attempt Five questions in all, selecting at least one from each unit. all questions carry equal marks

1   Perform the following conversion:
(a)   (i) $(10010110)_2$ $= (?)_8$ $= (?)_{16}$
       (ii) $(120211)_3$ $= (?)_{10}$ $= (?)_2$
       (iii) $(FC\ 37)_{16}$ $= (?)_{10}$ $= (?)_2$
       (iv) $(312.02)_4$ $= (?)_2$ $= (?)_{10}$
       (v) $(59A.FA)_{16}$ $= (?)_2$ $= (?)_{10}$

(b)   Explain the Error-detection and Correction codes using parity bit.

2(a)   How floating point numbers are represented in system? Explain the concept of normalization by taking a suitable example.

(b) Obtain the TT of following functions and express each sum-of-min term and product-of-max term from:
       (i)   (XY+Z) (Y+XZ)
       (ii)   (A'+B) (B'+C)

3(A)   Design a BCD to Decimal Decoder and construct a TT, K-map and logical diagram for a FULL ADDER.

(b)   What is MUX, design 4:1 MUX

4   Write short notes on the following
       (i)   Weighted codes
       (ii)   Gray cyclic code
       (iii) 1's and 2's complement
       (iv)   Universal Gate

UNIT-II

5(a)   Explain the sequential circuit differs from the combinational circuit. Explain the working of JKFF.

(b)   What is counter? Design a three bit synchronous Mode-5 counter.

6(a)   What do you mean by optical storage devices? What are the main features of it? Explain two storage devices.

(b)   A Computer uses a RAM chip of 1024*1 capacity.
   (i)   How many chip are needed and how should the address line connected to provide a memory capacity of 1024 bytes?
   (ii)   How many chip are needed to provided a memory capacity of 16K bytes? Explain in word, how chip are to be connected to address line.

7   Explain the following terms:
   (i)   Latch
   (ii)   Asynchronous data transmission
   (iii)   Don't care condition

UNIT-III

8   Explain various types of Addressing Mode in computer system. List merits and demerits of each method

9   What do you mean by Instruction format? Explain different types of instruction format. Give suitable example.

10(a) What is interrupt? Differentiate between External and Internal interrupt.
  (b)   Write short note on Instruction cycle.