Roll No. ..... 4/1/2012 Total No. of Pages : 3

MCA/D11 4517

Computer Organisation

Paper : MCA-102

Time : Three Hours] [Maximum Marks : 80

Note :– Attempt **FIVE** questions in all. Question No. 1 is compulsory. In addition to question no. 1, attempt **FOUR** more questions, selecting one question from each Unit.

1. Answer the following questions briefly :

   (a) A computer system has 64 KW main memory with 16-bit word. Find the size of address decoder, MAR and MBR.

   (b) Do the following conversion :

   $(79.6)_8 = (?)_2 = (?)_{10}$

   (c) Convert 3×8 line decoder into full subtractor.

   (d) Can we connect I/O devices directly to a system bus ? Justify your answer.

   (e) Discuss IOPs.

   (f) Describe advantages of canonical forms.

   (g) Explain instruction formats.

   (h) Discuss Universal gate with an example. 3×8=24

UNIT–I

2. (a) Simplify F(a, b, c, d) = Σ(0, 1, 2, 4, 5, 6, 8, 9, 12) by using McCluskey and K-Map methods. 7

   (b) Discuss advantages and applications of digital logic gates in detail. 7

3. (a) Design a single-error detecting and single error correcting Hamming code for 101001101. Also discuss how an error is automatically corrected in this code. 7

   (b) Differentiate between fixed-point and floating-point representation of numbers with their relative merits and demerits. 7

UNIT–II

4. Differentiate between adders and subtractors. Also discuss their uses and advantages in detail with examples. 14

5. Differentiate between the following with their relative advantages and applications :

   (i) Encoders and Decoders

   (ii) Multiplexers and Demultiplexers 14

UNIT–III

6. Differentiate between the following in detail :

   (i) D Flip-flop and T Flip-flop

   (ii) Ripple and Ring counters. 14

7. Explain the following in detail with their uses and advantages :

   (i) Flash memory

   (ii) Shift Registers. 14

UNIT–IV

8. Describe the following :

   (i) Micro program sequencer

   (ii) Instruction cycles

   (iii) I/O interface

   (iv) Interrupt structure. 14

9. Write short notes on the following :

   (i) Addressing modes

   (ii) Working of DMA. 7,7