MCA /D-18

COMPUTER ORGANIZATION

MCA -14-12

1. Answer the following questions in brief :
   (a) Simplify (w.x)'+x'.z'+w'.x.y.z+x.y.z.using Boolean algebra and realize the circuit
   (b) Explain in the following terms w.r.t. floting point numbers : precision, overflow, NaN and normalization.
   (c) What is locality of reference? Explain its significance?
   (d) Distinguish between write – through and copy-back cache designs.

Unit I

2. (a) Simplify the following Boolean function using Quine McCluskey procedure :
   F(A, B, C, D) += (0,2,8,9,10,11,14,15)

(b) What is Decoder ? Design a BCD –to-Seven-Segment decoder.

3. (a) What is Shift Register" Design a 4-bit left-shift register.

   (b) What is JK flip-flop? Explain its working with the help of logic diagram and characteristic table.

Unit II

4.(a) Explain read and write operations in memory with the help of timing diagram. Also distinguish between SRAM and DRAM.

(b) How can you construct 8x2 ROM chip with control signals?

5. (a) What is I/O Interface? Draw the block diagram for generic I/O interface circuitry for an output device along with its load logic circuitry.

   (b) What is RTL? Design Total Booth controller using RTL.

Unit III

6. (a) What is hardwired control? Design hardwired control CPU with 6 Bit address, 4 instructions and 64 byte memory.

(b) What is the purpose of micro sequencer? Design a simple micro sequencer.

7. Write a shift-add multiplication algorithm. Convert the algorithm into RTL code. Give the hardware implementation of this algorithm.

Unit IV

8. (a) Why do you have levels in cache memory? Explain the associative mapping scheme.

(b) What is segmentation? Explain conversion of logical address into physical address using segmentation.

9. (a) Explain source-initiated data transfer using handshaking with the help of suitable diagram.

(b) Write a short note on USM standard.