Total No. of Questions :5] *[Total No. of Printed Pages :2*

Roll No .....

MCA - 104

MCA. I Semester

Examination, December 2016

Computer Organization and Assembly Language Programming

Time : Three Hours

Maximum Marks : 70

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max.50 words) carry 2 marks, part C (Max.100 words) carry 3 marks, part D (Max.400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Why is EBCDIC code used?
   b) What is Hamming code?
   c) Perform the following additions using binary number system only:-
      i) $110011_2 + 1100_2$
      ii) $11001.1011_2 + 1011.0110_2$
   d) What is Counter? Compare a ripple and a synchronous counter?

OR

Draw the schematic diagram of a Master-Slave J-K Flip Flop ? Discuss its working principle.

Unit - II

2. a) What is Micro-operation?
   b) Draw the block diagram and timing diagram to shift/transfer the content of register R1 to register R2 using Register transfer language.
   c) Draw and explain the Bus system of four registers.

   d) Explain 4 bit arithmetic circuit with diagram.

OR

Draw 4 bit Combinational circuit shifter and Explain its working.

Unit - III

3. a) Define Addressing mode?
   b) What is an Instruction Cycle? Write its phases.
   c) What is an Interrupt? Explain its concepts and hardware used.
   d) What is the Necessity of DMA? Explain the two modes in which DMA interface operates to transfer data.

OR

Explain the various data transfer modes? Differentiate between Isolated I/O and memory mapped I/O?

Unit - IV

4. a) What is an Assembler?
   b) Write the rules of Assembly language.
   c) Write an assembly language program for 8086 that divides 32 bit number by a 16 bit number.
   d) Explain the architecture of 8086 with pin diagram.

OR

Explain the Addressing mode and Instruction set of 8086.

Unit - V

5. a) Differentiate between secondary memory and primary memory.
   b) What is Paging?
   c) How many 128×8 RAM chips are needed to provide a memory capacity of 2048 bytes.
   d) What is cache memory? Explain the types of mapping procedures.

OR

Calculate the average access time experienced by a processor if a cache bit rate is 0.88, miss penalty is 0.015 milliseconds and cache access time is 10 microseconds.

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