Roll No ....

MCA-104
M.C.A. I Semester
Examination, June 2020
Computer Organization and Assembly Language Programming
Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

     ii) All questions carry equal marks.

1. a) What is Counter? Compare a ripple and a synchronous counter?

   b) Perform the following additions using binary number system only :

     i) $110011_2 + 1100_2$

     ii) $11001.1011_2 + 1011.0110_2$

2. a) Draw the logic diagram of RS flip-flop along with Hs characteristic table and excitation table. Explain various state transition.

   b) Simplify the following expression using Karnaugh map in sum of the product form:

     $F(A, B, C, D) = \Sigma\ (1, 3, 5, 7, 9, 11, 13, 15)$

3. a) What are the various categories of micro operations? Explain with suitable examples.

   b) The following transfer statements specify a memory. Explain the memory operation in each case.

     i) $R2 \leftarrow M[AR]$

     ii) $M[AR] \leftarrow R3$

     iii) $R5 \leftarrow M[R5]$

4. a) Write and explain three phases of an instruction cycle.

   b) Briefly explain all the addressing modes of computer instruction.

5. a) Why does DMA have priority over the CPU when both request a memory transfer?

   b) State the differences between synchronous and asynchronous serial transfer.

6. a) Define the pin diagram of 8086 with the help of suitable diagram.

   b) Write an assembly language program for 8086 that divides 32 bit number by a 16 bit number.

7. a) How many 128×8 RAM chips are needed to provide a memory capacity of 2048 bytes.

   b) What do you understand by segmentation? Write advantages of segmentation.

8. Write short notes on any three of the following:
   i) Hamming code
   ii) Multiplexers
   iii) Paging
   iv) Virtual memory organization
   v) Static and dynamic RAM

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