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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 its characteristic table and excitation table. Explain various state transitions.
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) $R5 \leftarrow M[R5]$

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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
