Roll No. | | | | | | | | | | | | |  Total No. of Pages : 02

Total No. of Questions : 18

B.Tech (CSE) (Sem.–3)

# COMPUTER ARCHITECTURE

Subject Code : CS-201

Paper ID : [A0451]

Time : 3 Hrs. Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

## SECTION-A

**Answer briefly :**

1) How many read and write cycles are generated by 8085 to execute the OUT port instruction?

2) What is the difference between register direct and register indirect addressing modes?

3) What are the advantages and disadvantages of assembly language programming?

4) What is the difference between L1 and L2 cache?

5) Is it possible that the data hazards, instruction hazards and structural hazards might be encountered simultaneously?

6) What do you mean by memory interleaving?

7) The time delays for the four segments in a pipeline are as follows: $t_1 = 50ns$; $t_2 = 30ns$, $t_3 = 95ns$, and $t_4 = 45ns$. The interface registers delay time $t_r = 5ns$. How long would it take to add 100 pairs of numbers in the pipeline?

8) A relative mode branch type of instruction is stored in memory at an address equivalent to decimal 750. The branch is made to an address equivalent to decimal 500. What should be the relative address field of the instruction in decimal?

9) List four peripheral devices that produce an acceptable output for a person to understand.

10) Represent the following conditional control statement by two register transfer statements with control functions

$$\text{if}(P = 1) \text{ then } (R1 \leftarrow R2) \text{ else if } (Q = 1) \text{ then } (R1 \leftarrow R2)$$

## SECTION-B

11) Why a DMA controller has bidirectional address bus? Justify.

12) What is meant by 'mapping'? In how many ways mapping can be implemented? What is the role of cache directory in mapping?

13) Is the pipeline architecture applicable only for the RISC architecture? Justify.

14) In how many ways the MIMD architecture can be implemented? Briefly explain the specialty of each of them.

15) What is meant by micro-operation? Give examples. Write micro-operations for ADD instruction.

## SECTION-C

16) Compare the architecture of SIMD and SPMD machines.

17) Discuss the performance evaluation SPEC marks, LINPACK wheatstone, dhrystone.

18) Define each of the following IO control methods: programmed IO, DMA controllers, IOPs. List the advantages and disadvantages of each method with respect to the following

a) Program design complexity

b) IO bandwidth

c) Interface hardware costs