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B. Tech (AI & Machine Learning) (Semester –4th)
COMPUTER ORGANIZATION & ARCHITECTURE

Subject Code: BCSES1-401

Paper ID: 22113107

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a. What are the steps involved in the instruction cycle?
- b. Define instruction set and list the types of instruction set.
- c. What are CPU registers?
- d. Differentiate between Arithmetic Shift Left and Arithmetic Shift Right.
- e. What is Control Unit?
- f. What are software interrupts and exceptions?
- g. Briefly explain cache size?
- h. Discuss memory interleaving in brief.
- i. What do you mean by memory hierarchy?
- j. Discuss carry look-ahead adder.

Section – B

(5 marks each)

- Q2. Discuss the role of pipelining for data processing in computer organization. How it increases the throughput?
- Q3. Write down the advantages and disadvantages of semiconductor memory.
- Q4. Explain in detail the different mappings used for cache memory.
- Q5. Compare RISC and CISC architecture.
- Q6. What are addressing modes? Explain various addressing modes with examples.

Section – C

(10 marks each)

- Q7. Explain how DMA controller is initialized for DMA data transfer with diagram?
- Q8. What is the need of replacement algorithms in memory organization? Explain with example.
- Q9. Explain hardwired and micro-programmed control units and compare them.