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18EC35

Third Semester B.E. Degree Examination, Feb./Mar. 2022
Computer Organization and Architecture

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the basic operational concept between the processor and memory with neat block diagram. (08 Marks)
- b. Explain the various parameters affecting the performance of a computer and also provide the basic performance equation. (08 Marks)
- c. Write a short note on single bus structure with neat diagram. (04 Marks)

OR

- 2 a. List out and explain the three systems used for representing signed numbers and also brief about the modular number system concept. (08 Marks)
- b. Explain IEEE standard used for single and double precision floating point number representation with examples. (08 Marks)
- c. Write a short note on Big-endian and little-endian assignment. (04 Marks)

Module-2

- 3 a. What is addressing mode? Explain any four addressing modes with examples. (08 Marks)
- b. What are assembler directives? Explain about the various directives used in the program with example. (08 Marks)
- c. Write a short note on the assembly and execution of programs. (04 Marks)

OR

- 4 a. With neat diagram and program example, explain a simple I/O task between processor, keyboard and display. (10 Marks)
- b. What is subroutine? Illustrate the subroutine function with parameter passing by value and reference with suitable program. (10 Marks)

Module-3

- 5 a. Explain the concept of memory mapped I/O with neat diagram of I/O interface with program example. (10 Marks)
- b. Write short notes on: (i) Interrupt hardware (ii) Interrupt nesting (10 Marks)

OR

- 6 a. What is an interrupt? Explain about various implementation techniques of interrupt. (10 Marks)
- b. Explain how simultaneous interrupt request is handled using the concept of Daisy Chain. (10 Marks)

Module-4

- 7 a. Explain the internal organization of memory chips with example. (08 Marks)
- b. Explain the internal organization of $2M \times 8$ DRAM chip with neat diagram. (08 Marks)
- c. Write a short note on ROM. (04 Marks)

OR

- 8 a. Discuss about the use of cache memory in the processor system. (08 Marks)
b. What is virtual memory? Explain its organization with neat diagram. (08 Marks)
c. Write a short note on magnetic hard disk. (04 Marks)

Module-5

- 9 a. Explain single-bus organization of the data path inside a processor with neat diagram. (10 Marks)
b. Explain the process of fetching a data word from memory using respective registers of a processor with neat diagram. (10 Marks)

OR

- 10 a. Explain the control signal generation required for proper sequence of instructions in the processor. (10 Marks)
b. What is microprogrammed control? Explain its basic organization with suitable diagram and example. (10 Marks)
