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18EC35

Third Semester B.E. Degree Examination, July/August 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. With a neat diagram, describe the functional units of a computer.   (08 Marks)
    b. Illustrate single bus structure of a computer.   (06 Marks)
    c. Explain Little-endian and Big-endian byte address assignment.   (06 Marks)

OR

2   a. Explain the following with an example:
       i)   Three-address instruction
       ii)   Two-address instruction
       iii) One-address instruction.   (09 Marks)
    b. List the functions of system software in computer.   (06 Marks)
    c. Discuss IEEE standard for single precision and double precision floating point numbers with standard notations.   (05 Marks)

Module-2

3   a. Define addressing mode. Discuss the following addressing modes with example:
       i) Register   ii) Direct   iii) Indirect   iv) Index.   (10 Marks)
    b. Explain various assembler directives used in assembly language program.   (06 Marks)
    c. List the operations performed by call and return instructions.   (04 Marks)

OR

4   a. With example illustrate logical and arithmetic shift and rotate instructions.   (10 Marks)
    b. Explain stack operation with example.   (10 Marks)

Module-3

5   a. Illustrate interrupt priority schemes, with neat diagram.   (08 Marks)
    b. Describe the bus arbitration schemes, with neat diagram.   (12 Marks)

OR

6   a. Explain use of DMA controllers in a computer system, with neat diagram.   (08 Marks)
    b. What are interrupts? Explain various ways of enabling and disabling interrupts.   (08 Marks)
    c. Write a explanatory note on interrupt hardware.   (04 Marks)

Module-4

7   a. Illustrate internal organization of a 2M × 8 dynamic memory chip.   (08 Marks)
    b. What is mapping functions? Explain direct mapping scheme, with neat diagram.   (06 Marks)
    c. With neat diagram, explain virtual memory organization.   (06 Marks)

8 a. Explain principle of working of magnetic disk, with neat diagram.
   b. Discuss A single transistor dynamic memory cell.
   c. Explain different types of non-volatile memory concept

Module-5

9 a. Illustrate multiple Bus organization concept with neat diagram
   b. Describe basic organization of a micro programmed control unit with necessary microinstructions.

10 a. Develop the complete control sequence for the execution of instruction

   b. Discuss Hardwired control unit organization with relevant block diagram
   c. Illustrate the connection and control signals for register MDR with

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