

CBCS SCHEME

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18MT36

Third Semester B.E. Degree Examination, July/August 2021 Computer Organization and Architecture

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1
 - a. Explain the basic operational concepts of the computer with a neat diagram. (06 Marks)
 - b. Write the basic performance equation. Explain the role of each of the parameters in the equation on the performance of the computer. (06 Marks)
 - c. What is byte addressability? Discuss Big-Endian and Little-Endian assignment with necessary figure and example. (08 Marks)
- 2
 - a. Explain the different functional units of a computer with a neat block diagram. (08 Marks)
 - b. Describe basic instruction types with example. (06 Marks)
 - c. What is straight line sequencing? Illustrate with an example. (06 Marks)
- 3
 - a. Define addressing mode. Explain the following addressing modes with example. Direct, indirect and index. (08 Marks)
 - b. What are assembler directives? Point out and explain the various directives with example. (08 Marks)
 - c. Demonstrate the operation of any two rotate instruction with example. (04 Marks)
- 4
 - a. What is subroutine? How to pass parameters to subroutines? Illustrate with an example. (08 Marks)
 - b. What is stack? Write routine for performing safe push and pop operation. (08 Marks)
 - c. Write short note on execution of assembly language. (04 Marks)
- 5
 - a. What is an interrupt? Explain the implementation of interrupt request line with a neat diagram. (06 Marks)
 - b. What is interrupt nesting? Demonstrate the implementation of interrupt priority using individual interrupt request and acknowledge lines. (08 Marks)
 - c. Summarize the operation of controlling device requests with an example. (06 Marks)
- 6
 - a. Write a note on memory mapped I/O. (04 Marks)
 - b. State DMA method. Write a note on registers in a DMA interface. (08 Marks)
 - c. With a neat diagram, discuss the working of daisy chain and arrangement of priority groups in detail. (08 Marks)
- 7
 - a. With a neat diagram, illustrate the internal organization of 16×8 memory chip. (08 Marks)
 - b. Give implementation of static RAM memory cell. Discuss its read and write operation. (06 Marks)
 - c. Define ROM. Point out and describe various types of ROMs. (06 Marks)
- 8
 - a. Draw the organization of $1K \times 1$ memory chip and explain its working. (06 Marks)
 - b. With a neat diagram, describe the organization of $2m \times 8$ dynamic memory chip. (08 Marks)
 - c. What is virtual memory? How virtual memory address is translated to physical address? (06 Marks)

- 9 a. Draw and explain single bus organization of a processor. Write the control sequence for the execution of an instruction add (R_3), R_1 , (10 Marks)
b. Explain with block diagrams the organization of micro programmed control unit. (10 Marks)
- 10 a. With a neat diagram, discuss 3 bus organization and write control sequence for the instruction Add R_4 , R_5 , R_6 . (10 Marks)
b. Demonstrate the organization of hard wired control unit with neat block diagrams. (10 Marks)

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