

CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

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 (R₃), R₁, (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 R₄, R₅, R₆. (10 Marks)
b. Demonstrate the organization of hard wired control unit with neat block diagrams. (10 Marks)

* * * * *

VTU EXAMS JULY-AUG 2021