

CBCS SCHEME



USN

18CS34

Third Semester B.E. Degree Examination, June/July 2023 Computer Organization

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 operation concepts of the computer with neat diagram. (08 Marks)
- b. Write a program to evaluate the arithmetic statement $Y = (A + B) * (C + D)$ using three address, two address and one address instruction. (08 Marks)
- c. Explain the following :
 - i) Big endian assignment
 - ii) Little endian assignment(04 Marks)

OR

- 2 a. What is an addressing mode? Explain any four types of addressing modes, with suitable example. (10 Marks)
- b. How the input and output operations are performed by the processor? Write a program that reads line or characters and display it. (10 Marks)

Module-2

- 3 a. With neat sketches, explain various methods for handling interrupts raised by multiple devices. (10 Marks)
- b. What is DMA Bus arbitration? Explain different bus arbitration techniques. (10 Marks)

OR

- 4 a. Explain synchronous bus and asynchronous bus with neat diagrams. (10 Marks)
- b. With the help of timing diagram explain the read operation on the PCI bus. (10 Marks)

Module-3

- 5 a. With a neat diagram explain the internal organization of 16×8 memory chip. (10 Marks)
- b. Describe the working of static RAM memories. (05 Marks)
- c. What is memory interleaving? Explain. (05 Marks)

OR

- 6 a. What is cache memory? Explain the three mapping functions of cache memory. (10 Marks)
- b. Analyse how data is written into ROM. Discuss different types of Read Only Memories. (10 Marks)

Module-4

- 7 a. Convert the following pairs of decimal numbers to 5 figure signed 2's complement binary number and add them. State whether overflow has occurred.
 - i) -5 and 7
 - ii) -10 and -13
 - iii) -14 and 11(06 Marks)
- b. Draw 4-bit carry look ahead adder and explain. (06 Marks)
- c. Explain Booth's algorithm. Multiply +13 and -6 using Booth's algorithm. (08 Marks)

OR

- 8 a. Perform the division of $8 \div 3$ using restoring division. (08 Marks)
b. Explain the concept of carry-save addition for multiplication operation $M \times Q = P$ for 4-bit operands with diagram and example. (06 Marks)
c. Explain IEEE standard for floating point numbers. (06 Marks)

Module-5

- 9 a. Write and explain the control sequence for execution of the instruction $\text{Add}(R_3), R_1$. (10 Marks)
b. Explain the three-bus organization of the data path. (10 Marks)

OR

- 10 a. Briefly explain Hardwired control and micro programmed control. (10 Marks)
b. What is pipeline? Explain 4 stages of pipeline with its instruction execution steps and hardware organization. (10 Marks)
