

CBCS SCHEME

17CS34



Third Semester B.E. Degree Examination, Jan./Feb. 2023 Computer Organization

Max. Marks: 100

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

Module-1

- 1 a. Explain with a neat diagram, the connection between the processor and the computer memory. (05 Marks)
- b. Explain the basic instruction types with example. (05 Marks)
- c. Define addressing mode. Explain the various addressing mode with example. (10 Marks)

OR

- 2 a. Explain the methods to improve the performance of computer. (05 Marks)
- b. Explain Big-Endian, little – Endian and assignment byte addressability. (05 Marks)
- c. Point out various shifts and rotate instruction and example with neat diagram. (10 Marks)

Module-2

- 3 a. Define bus arbitration. Explain detail any one approach of bus arbitration. (10 Marks)
- b. What is Interrupts? Explain interrupt priority scheme. (05 Marks)
- c. What is DMA? Write a note on register in DMA interface. (05 Marks)

OR

- 4 a. With a block diagram, explain how the printer interfaced to processor. (10 Marks)
- b. Explain the following with respect to USB:
 - i) U.S.B. Architecture
 - ii) U.S.B. protocols. (10 Marks)

Module-3

- 5 a. Explain synchronous DRAMS with a block diagram. (05 Marks)
- b. Define ROM. Explain various types of ROMS. (05 Marks)
- c. With a neat diagram, explain the internal organization of a $2M \times 8$ dynamic memory chip. (10 Marks)

OR

- 6 a. Explain in detail. Associative mapping technique and set associative mapping technique with neat diagram. (10 Marks)
- b. What is virtual memory? With a neat diagram, explain how virtual memory address is translated. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, $42+8 = 50$, will be treated as malpractice.

Module-4

- 7 a. Perform following operations on the 5-bit signed numbers using 2's complement representation system. Also indicate whether overflow has occurred.
 i) $(-9) + (-7)$ ii) $-(-8)$ (05 Marks)
 b. Explain with a neat diagram, 4 bit carry look ahead adder. (05 Marks)
 c. Explain the concept of carry save addition for the multiplication operation. $M \times Q = P$ for 4-bit operands with diagram and suitable example. (10 Marks)

OR

- 8 a. Multiply the following signed 2's complement members using Booth's algorithm, multiplicand = $(010111)_2$, multiplier = $(110110)_2$. (05 Marks)
 b. Perform division operation on the following unsigned numbers using the restoring method. Dividend = $(10101)_2$, Divisor = $(00100)_2$. (05 Marks)
 c. With a neat diagram, explain the floating point addition/subtraction unit. (10 Marks)

Module-5

- 9 a. Draw and explain multiple bus organization of CPU and write the control sequence for the instruction add R_4, R_5, R_6 for the multiple bus organization. (10 Marks)
 b. Explain with neat diagram, micro programmed control method for design of control unit and write the micro-routine for the instruction branch < 0 . (10 Marks)

OR

- 10 a. With block diagram, explain the working of microwave oven in an embedded system. (10 Marks)
 b. With block diagram, explain parallel I/O interface. (10 Marks)
