

CBCS SCHEME

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17CS34

Third Semester B.E. Degree Examination, Jan./Feb. 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 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)
