

Third Semester B.E./B.Tech. Degree Examination, June/July 2025

**Computer Organization and Architecture**

Max. Marks: 100

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

**Module-1**

- 1 a. Make use of a neat block diagram to explain the basic functional blocks of a computer. (10 Marks)
- b. Identify the parameters and their relative values for the improvement of computer performance using performance equation of the processor. (10 Marks)

OR

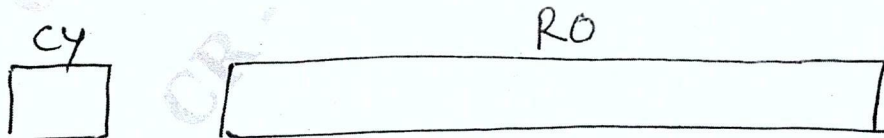
- 2 a. Explain single precision and double precision IEEE floating – point representation of a number with example. (10 Marks)
- b. Add the following numbers using 2's complement.
  - i) +2 and +4
  - ii) +7 and –3
  - iii) (–7) and (–3)
  - iv) –7 and +3
  - v) +7 and +4
 State whether or not overflow occurs in each case. (10 Marks)

**Module-2**

- 3 a. Make use of examples to explain various addressing modes and provide the effective address equation in each addressing mode. (10 Marks)
- b. Develop an assembly language program to add scores of N students in each test and store it in memory location SUM1, SUM2, SUM3. (10 Marks)

OR

- 4 a. Develop an assembly language program to read a line of character and display it. (10 Marks)
- b. Give the result of the following shift and rotate operations in the following format.



- i) CY = 0, R0 = 01110 . . . . 011 perform logical shift left i.e Lshift L # 2, R0
  - ii) CY = 0, R0 = 01110 . . . . 011 perform Arithmetic shift left i.e Ashift L # 2, R0
  - iii) CY = 0, R0 = 01110 . . . . 011 perform Rotate left without carry i.e RotateL # 2, R0
  - iv) CY = 0, R0 = 01110 . . . . 011 perform Rotate left with carry i.e RotateLC # 2, R0.
- (10 Marks)

**Module-3**

- 5 a. Explain methods of enabling and disabling interrupts. (10 Marks)
- b. Explain interrupt priority schemes for handling multiples devices requesting simultaneously. (10 Marks)

OR

- 6 a. Develop an assembly language program to read an input from the keyboard and store the characters in successive byte locations in memory starting at location LINE. (10 Marks)
- b. Make use of a neat diagram and explain DMA. (10 Marks)

**Module-4**

- 7 a. Make use of a neat diagram and illustrate the organization of 1 K × 1 memory chip. (10 Marks)
- b. Explain various types of ROMs. (10 Marks)

OR

- 8 a. Make use of a neat diagram and explain the working of CMOS memory cell. (10 Marks)
- b. Explain working principle of magnetic disk with the help of a figure. (10 Marks)

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**Module-5**

- 9 a. Make use of a neat diagram and explain the signal bus organization of data path inside a processor. (10 Marks)
- b. With a figure, explain the implementation of 1 – bit register. (10 Marks)

OR

- 10 a. Construct sequence of operation and timing diagram for the instruction MOV (R1), R2. (10 Marks)
- b. Explain hardwired control unit organization in a processing unit. (10 Marks)

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