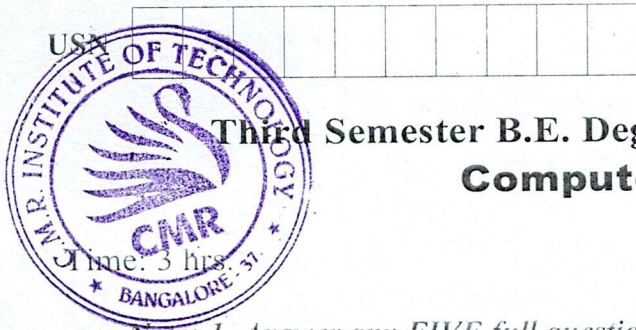




Third Semester B.E. Degree Examination, June/July 2025 Computer Organization

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Assume any suitable missing data.

Module-1

- 1 a. With a neat diagram, explain the basic operational concepts of computer. (10 Marks)
- b. Define clock rate and explain performance measurement with equation. (10 Marks)

OR

- 2 a. What is an addressing mode? Explain any 4 types of addressing mode, with suitable example. (10 Marks)
- b. State and explain the possibilities of encoding of machine instruction of 32 bit word. (10 Marks)

Module-2

- 3 a. Explain interrupt and interrupt hardware. (07 Marks)
- b. Explain how I/O devices should be organized in a priority structure. (08 Marks)
- c. Define Exception. Explain different kind of exceptions in brief. (05 Marks)

OR

- 4 a. What is DMA Arbitration? Briefly explain different bus arbitration techniques. (10 Marks)
- b. Explain USB tree structures protocols. (10 Marks)

Module-3

- 5 a. Explain the operation of CMOS memory cell. (05 Marks)
- b. Explain the working of static RAM memories. (05 Marks)
- c. Draw the internal organization of a $2M \times 8$ dynamic memory chip and explain working with fast page mode. (10 Marks)

OR

- 6 a. What is cache memory? Analyze the 3 mapping functions of cache memory. (10 Marks)
- b. Explain memory interleaving with diagram. State hit rate and penalties. (10 Marks)

Module-4

- 7 a. Explain the various types of number representation with example and draw the addition, subtraction logic unit. (09 Marks)
- b. Explain Booth Algorithm. Perform $(+13) \times (6)$ using Booth algorithm. (06 Marks)
- c. Subtract -5 from -7 using Two's complement subtraction. (05 Marks)

OR

- 8 a. Explain the design of carry look ahead adder circuit with suitable diagram. (10 Marks)
- b. Draw the circuit arrangement for binary division. Perform division. $(1000) \div (11)$ (10 Marks)

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Module-5

- 9 a. With neat diagram, explain single bus organization of computer and fundamental concepts. (10 Marks)
- b. Write a sequence of control steps execute the instructions, Add (R_3) , R_4 on single bus architecture. (10 Marks)

OR

- 10 a. Explain in detail, the organization of control unit. (10 Marks)
- b. What is pipelining? Explain 5 stage instruction pipeline with timing diagram. (10 Marks)
