

CBCS SCHEME

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18CS34

Third Semester B.E. Degree Examination, July/August 2022 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. With neat diagram, explain the basic operational concepts of computer. (10 Marks)
b. Explain:
(i) Processor clock
(ii) Clock rate
(iii) Basic performance equation
(iv) Performance measurement (10 Marks)

OR

- 2 a. Explain all addressing modes with assembler syntax. (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. State steps in enabling and disabling interrupts. (10 Marks)
b. Explain interrupt nesting and handling simultaneous requests in interrupts. (10 Marks)

OR

- 4 a. Explain DMA transfer with bus arbitration. (10 Marks)
b. Explain USB tree structure and protocols. (10 Marks)

Module-3

- 5 a. Draw the internal organization of a $2M \times 8$ dynamic memory chip and explain working with fast page mode. (10 Marks)
b. State and explain the types of read only memory and memory hierarchy. (10 Marks)

OR

- 6 a. What is cache memory? Explain different mapping functions with diagrams. (10 Marks)
b. Explain memory interleaving with diagram. State hit rate and miss penalty. (10 Marks)

Module-4

- 7 a. Explain different types of number representations with example and draw the addition/subtraction logic unit. (10 Marks)
b. Design and explain the 4-bit carry look-ahead adder. (10 Marks)

OR

- 8 a. Explain Booth algorithm. Perform $(+13) \times (-6)$ using Booth algorithm. (10 Marks)
b. Draw the circuit arrangement for binary division. Perform $(1000) \div (11)$ using restoring division. (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-5

- 9 a. With neat diagram, explain single-bus organization of computer and fundamental concepts. (10 Marks)
- b. State the steps required in execution of Add (R_3), R_1 , and explain the execution of branch instruction. (10 Marks)
- OR
- 10 a. Explain the information required to generate control signals and structure of micro programmed control unit. (10 Marks)
- b. Explain basic idea of pipe lining and 4-stage pipeline structure. (10 Marks)
