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Third Semester B.E. Degree Examination, June/July 2019 Computer Organization

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the connection between processor and memory with neat diagram and show how to add $A + B$ to form C with the help of the same diagram. (08 Marks)
- b. Write short notes on : (08 Marks)
 - (i) Performance equation
 - (ii) SPEC Rating

OR

- 2 a. What do you mean by addressing mode? Explain different types of addressing modes with example. (10 Marks)
- b. Explain shift and rotate instructions with example. (06 Marks)

Module-2

- 3 Write short notes on : (16 Marks)
 - (i) Daisy chain
 - (ii) Subroutine
 - (iii) Interrupt hardware
 - (iv) Exception

OR

- 4 a. Explain how DMA (with register) is taking place in a system with necessary diagram. (08 Marks)
- b. Define Bus arbitration. Discuss different types of Bus Arbitration methods with diagram. (08 Marks)

Module-3

- 5 a. With diagram, describe the internal organization of a 128×8 memory chip. (08 Marks)
- b. With the diagram of basic SRAM (Static RAM) and DRAM (Asynchronous DRAM) chip (cell), explain the read and write operations on each of them. (08 Marks)

OR

- 6 a. Describe different types of cache mapping techniques (between memory to cache memory) with diagram. (10 Marks)
- b. Calculate the total capacity of a 4.8 inch disk having the following parameters: (03 Marks)
 - (i) 100 data recording surfaces
 - (ii) 100000 tracks per surface
 - (iii) 100 sectors per track
 - (iv) Each track contains 512 bytes of data.
- c. In a given system (i) hit rate (h) = 0.5 (ii) Miss penalty (M) = 100 ns (iii) Time to access cache memory (c) = 100 ns. Calculate the average access time (t_{ave}) experienced by the processor. (03 Marks)

Module-4

- 7 a. Write down the steps of Booths multiplication algorithm. (02 Marks)
- b. Perform Booths multiplication between $(+13) \times (-6)$. (08 Marks)
- c. Explain generation and propagation functions used in Carry-Look-Ahead Adder. (06 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.



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OR

- 8 a. Explain Bit-Pair Recording / Fast multiplication with example. (08 Marks)
b. Write down the steps of restoring division algorithm. Apply Restoring division algorithm on 1000/11. (08 Marks)

Module-5

- 9 a. Describe Multiple Bus Organization (with diagram). (08 Marks)
b. Write down the control sequence for execution of the instruction Add (R_3), R_1 (08 Marks)

OR

- 10 a. What do you mean by micro-instruction? Design Basic organization of a microprogrammed control unit with diagram. (08 Marks)
b. Describe a simple microcontroller with diagram. Also mention parallel and serial I/O port in brief. (08 Marks)
