CBCS SCHEME

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18CS34

Third Semester B.E. Degree Examination, June/July 2023
Computer Organization

Time: 3 hrs. Max. Marks: 100

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

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-1

1 a. Explain the basic operation concepts of the computer with neat diagram. **(08 Marks)**

b. Write a program to evaluate the arithmetic statement Y = (A + B) * (C + D) using three address, two address and one address instruction. **(08 Marks)**

c. Explain the following :
i) Big endian assignment ii) Little endian assignment **(04 Marks)**

OR

2 a. What is an addressing mode? Explain any four types of addressing modes, with suitable example. **(10 Marks)**

b. How the input and output operations are performed by the processor? Write a program that reads line or characters and display it. **(10 Marks)**

Module-2

3 a. With neat sketches, explain various methods for handling interrupts raised by multiple devices. **(10 Marks)**

b. What is DMA Bus arbitration? Explain different but arbitration techniques. **(10 Marks)**

OR

4 a. Explain synchronous bus and asynchronous bus with neat diagrams. **(10 Marks)**

b. With the help of timing diagram explain the read operation on the PCI bus. **(10 Marks)**

Module-3

5 a. With a neat diagram explain the internal organization of 16×8 memory chip. **(10 Marks)**

b. Describe the working of static RAM memories. **(05 Marks)**

c. What is memory interleaving? Explain. **(05 Marks)**

OR

6 a. What is cache memory? Explain the three mapping functions of cache memory. **(10 Marks)**

b. Analyse how data is written into ROM. Discuss different types of Read Only Memories. **(10 Marks)**

Module-4

7 a. Convert the following pairs of decimal numbers to 5 figure signed 2's complement binary number and add them. State whether overflow has occurred.
i) - 5 and 7 ii) -10 and -13 iii) -14 and 11 **(06 Marks)**

b. Draw 4-bit carry look ahead adder and explain. **(06 Marks)**

c. Explain Booth's algorithm. Multiply +13 and -6 using Booth's algorithm. **(08 Marks)**

OR

8 a. Perform the division of 8 ÷ 3 using restoring division. **(08 Marks)**

b. Explain the concept of carry-save addition for multiplication operation M × Q = P for 4-bit operands with diagram and example. **(06 Marks)**

c. Explain IEEE standard for floating point numbers. **(06 Marks)**

Module-5

9 a. Write and explain the control sequence for execution of the instruction Add(R_3), R_1 . **(10 Marks)**

b. Explain the three-bus organization of the data path. **(10 Marks)**

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OR

10 a. Briefly explain Hardwired control and micro programmed control. **(10 Marks)**

b. What is pipeline? Explain 4 stages of pipeline with its instruction execution steps and hardware organization. **(10 Marks)**

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