CBCS SCHEME

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15CS34

Third Semester B.E. Degree Examination, Dec.2023/Jan.2024
Computer Organization

Time: 3 hrs. Max. Marks: 80

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. With a neat block diagram, explain the functional units of a computer. **(08 Marks)**

b. What is performance measurement? Explain the overall SPEC rating for the computer in a program suite. **(08 Marks)**

OR

2 a. Explain index addressing mode with an example program. **(08 Marks)**

b. Interpret the subroutine stack Frame with example. **(08 Marks)**

Module-2

3 a. Explain interrupt and interrupt hardware state steps in enabling and disabling interrupts. **(08 Marks)**

b. Illustrate a program that reads one line from keyboard, stores it in memory buffer, and echoes it back to the display in an I/O interface. **(08 Marks)**

OR

4 a. Explain DMA transfer with bus arbitration. **(08 Marks)**

b. With a neat diagram, explain general 8-bit parallel interface circuits. **(08 Marks)**

Module-3

5 a. Explain the organization of 1K × 1 memory chip. **(08 Marks)**

b. State and explain the types of read only memory and memory hierarchy. **(08 Marks)**

OR

6 a. What is cache memory? Explain direct mapping functions with diagram. **(08 Marks)**

b. Calculate the average access time experienced by a processor, if a cache hit rate is 0.88 Miss penalty is 0.015 milliseconds and cache access time is 10 micro seconds. **(08 Marks)**

Module-4

7 a. Perform the addition and subtraction of signed numbers :
i) + 4 and –6 ii) –5 and –2 iii) + 7 and –3 iv) + 2 and + 3. **(08 Marks)**

b. Design and explain the 4-bit carry look ahead adder. **(08 Marks)**

OR

8 a. Explain Booth algorithm. perform (+13) × (–6) using Booth algorithm. **(08 Marks)**

b. Show and perform non-restoring division for 3 and 8. **(08 Marks)**

Module-5

9 a. With a neat diagram, explain single-bus organization of computer and fundamental concepts. **(08 Marks)**

b. State the steps required in execution of Add(R_3), R_1. **(08 Marks)**

OR

10 a. Compare and contrast the following :
i) Hard – wired control ii) Micro-programmed control. **(08 Marks)**

b. What is pipeline? Explain the 4 stage pipeline with its instruction execution steps and hardware organization. **(08 Marks)**

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