CBCS SCHEME

USN | | | | | | | | | | |

17CS34

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. Draw and explain the connections between the processor and the main memory. **(08 Marks)**

b. What is performance? Explain basic performance equation and overall SPEC rating of computer. **(07 Marks)**

c. Explain Big-Endian and Little-Endian methods with examples. **(05 Marks)**

OR

2 a. What is addressing mode? Explain any four addressing mode with example. **(08 Marks)**

b. Explain the Basic Instruction types with example. **(06 Marks)**

c. Explain the shift and rotate operations with examples. **(06 Marks)**

Module-2

3 a. What is an interrupt? With supporting diagram, explain the following :
(i) Interrupt Nesting
(ii) Simultaneous request **(08 Marks)**

b. What do you mean by DMA? Explain its operations using registers in a DMA interface. **(08 Marks)**

c. What are exceptions? List and explain the different kinds of exceptions. **(04 Marks)**

OR

4 a. What is Bus Arbitration? Explain centralized and distributed arbitration with a neat diagram. **(10 Marks)**

b. Explain the following with respect to USB:
(i) USB Architecture (ii) USB Addressing **(10 Marks)**

Module-3

5 a. With a neat diagram, explain the internal organization of a 2M×8 dynamic memory chip. **(07 Marks)**

b. Explain direct mapping technique and set associative mapping technique. **(08 Marks)**

c. Define ROM. List and explain various types of ROMS. **(05 Marks)**

OR

6 a. What is virtual memory technique? Explain virtual memory address translation. **(08 Marks)**

b. Explain synchronous DRAMS with a block diagram. **(08 Marks)**

c. Define the following :
(i) Memory latency (ii) Memory bandwidth
(iii) Hit-rate (iv) Miss - penalty **(04 Marks)**

Module-4

7 a. Explain with a neat block diagram, 4-bit carry look ahead adder. **(08 Marks)**

b. Perform the following operations on the 4-bit signed numbers using 2's complement representation system:
(i) (–5)+(–2) (ii) (–7) – (–5) (iii) (–7) – (+1) (iv) (+2) – (–3). **(08 Marks)**

c. Write the rules for addition and subtraction of 'n' bit signed integers using 2's complement representation system. **(04 Marks)**

OR

8 a. Perform the multiplication for +13 and –6 using Booth's algorithm. **(10 Marks)**

b. Write algorithm that performs restoring division. Perform division using restoring algorithm.
Dividend = $(1000)_2$
Divisor = $(0011)_2$ **(10 Marks)**

Module-5

9 a. Explain single-bus organization of the data-path inside a processor with neat diagram. **(10 Marks)**

b. Write the control sequence for execution of the instruction Add (R_3), R_1 in the execution of a complete instruction. **(10 Marks)**

OR

10 a. Write short notes on :
(i) Hardwired control
(ii) Micro programmed control. **(10 Marks)**

b. With block diagram, explain the working of a microwave oven. **(10 Marks)**

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