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[Roll No.

BCA-11

BCA IVth Semester Examination Dec., 2023

COMPUTER ORGANIZATION

Time : 2 Hours]

[Max. Marks: 70

Note :- This paper is of Seventy (70) marks divided into two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given there in. *Candidates should limit* their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.

Section-A

(Long Answer Type Questions) 2×19=38

Note :- Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.



- With a neat block diagram, show how the basic computer registers are connected to the common bus. Explain the working of the 16-bit common bus. (19)
- 2. Answer the following :
 - (a) Illustrate the Memory Hierarchy in computer systems. Discuss the advantages of having a hierarchical memory structure. (9)
 - (b) Explore the internal organization of Memory Chips, focusing on Semiconductor RAM memories and Read-Only Memories (ROM). Discuss their characteristics and use cases. (10)
- Compare and contrast Programmed I/O, Interrupt-Driven I/O, and Direct Memory Access (DMA) as I/O techniques. Provide examples of scenarios where each is advantageous.
- 4. Answer the following :
 - (a) Define and differentiate between CISC (Complex Instruction Set Computers) and RISC (Reduced Instruction Set Computers). Discuss the design philosophy and advantages of each. (9)
 - (b) Explore the various Addressing Modes in the context of the 8085 microprocessor. Provide examples to illustrate the use of different addressing modes. (10)

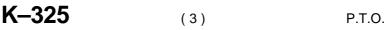
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- 5. Answer the following :
 - (a) Explain the operation of a Flip-Flop. How is it different from a latch? Provide examples of applications where Flip-Flops are commonly used ?
 (9)
 - (b) Discuss the significance of Magnitude Comparator in digital systems. How does it contribute to the comparison of binary numbers ? (10)

Section-B

(Short Answer Type Questions) 4×8=32

- *Note* :- Section 'B' contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.
- 1. Write a short note on the following :
 - (a) Multiplexer
 - (b) Demultiplexer
- 2. What is the difference between microprocessor and micro program ? Is it possible to design a microprocessor without a micro program ? Are all micro programmed computers also microprocessors ?



- 3. Explain the role and functionality of I/O Processors in a computer system. How do they enhance the efficiency of input and output operations ?
- 4. Describe the memory hierarchy. How does it contribute to the efficient functioning of a computer system ?
- Explain the internal organization of Semiconductor RAM memories. Discuss the advantages and disadvantages of using dynamic RAM (DRAM) over static RAM (SRAM).
- 6. Explain the role of parallel processing in computer system.
- Discuss the execution cycle of instructions in the 8085 microprocessor. Provide a step-by-step explanation.
- 8. Discuss the mapping functions used in Cache Memory. How does Cache Memory contribute to improving the overall performance of a computer system ?
