A–806

Total Pages : 4 **Roll No. .....**

BCA-11

Bachelor of Computer Application (BCA)

(Computer Organization)

4th Semester Examination, 2024 (June)

Time : 2:00 Hrs. 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 therein. ***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.

1. Define and compare CISC and RISC architectures. Discuss the advantages and disadvantages of each, with examples of processors that follow these architectures.

2. Provide an overview of pipelining. Explain the stages involved in a typical pipeline and how it improves the overall processing speed.

3. 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. Differentiate between different addressing modes in 8085 microprocessor. Explain different addressing modes with example.

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) Design a 4-bit synchronous counter using JK flip-flops. Include a state diagram and the necessary equations for each flip-flop. (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. Compare and contrast Magnetic Disk, RAID, Optical Memory, and Magnetic Tape as external memory devices. Discuss their use cases and limitations.

2. Discuss the concept of locality of reference. How does it impact the design and performance of cache memory ?

3. Explain the purpose and functioning of virtual memory. Discuss the advantages and challenges associated with using virtual memory in computer systems.

4. Describe the memory hierarchy. How does it contribute to the efficient functioning of a computer system ?

5. 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 and functions of I/O processors in a computer system. How do they enhance the overall performance of the system ?

7. Discuss the execution cycle of instructions in the 8085 microprocessor. Provide a step-by-step explanation.

8. Describe the working of a Multiplexer and a De-multiplexer. Provide scenarios where each of these components is useful in digital systems.

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