

V (Printed Pages 4)
(21225) Roll No.
B.C.A.-III Sem.

18013
B.C.A. Examination, Dec.-2025
Computer Architecture and
Assembly Language
(BCA-303)

Time : Three Hours] [Maximum Marks : 75

Note : Attempt questions from **all** the sections as per instructions.

Section-A

(Very Short Answer Type Questions)

Note : Attempt **all** questions. $5 \times 3 = 15$

1. Briefly explain the function of the Instruction Register (IR) and the Program Counter (PC).
2. Define an Instruction Format. Name its two main parts.

P.T.O.

3. How is Integer Subtraction typically performed in a computer system using binary arithmetic?
4. List any three key features of the Intel 8085 Microprocessor architecture.
5. Differentiate between an Assembler and a Linker.

Section-B

(Short Answer Type Questions)

Note : Attempt any **two** questions. $2 \times 7\frac{1}{2} = 15$

1. Explain the working of the Timing and Control Unit. Draw a simple block diagram illustrating its essential components and their interaction.
2. Describe the various Addressing Modes used in instruction formats. Provide an example for any three modes.

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3. Provide an overview of the key differences in Architecture and Interface between the Intel 8085 and Intel Pentium processors.

Section-C

(Long Answer Type Questions)

Note : Answer any **three** questions. $3 \times 15 = 45$

1. Describe the architecture of a Basic Computer. Explain the sequence of operations for fetching an instruction and executing a Register Reference instruction, starting from the moment the PC contains the address of the next instruction.
2. Explain the Integer Division Algorithm (restoring or non-restoring). Illustrate the steps with a clear, small example of dividing two positive binary numbers.

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P.T.O.

3. Provide a detailed Evaluation of Microprocessors from the Intel 8085 to the Intel Pentium. Focus on the evolution of key architectural features like bus size, internal registers, pipelining, and cache implementation.
4. Explain the role of an Assembly Language Programmer. Discuss the concept of Assembly Level Instructions and their classification (e.g., Data Transfer, Arithmetic, Logic, Control). Give one example of an instruction from each class.
5. Discuss in detail the characteristics, advantages, and disadvantages of RISC and CISC architectures. Provide relevant examples of instruction sets/design philosophies for each.

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