

6E7141	Roll No. _____	Total No. of Pages : 2
6E7141 B.Tech. VI-Sem. (Main/Back) Examination, April/May - 2026 Electrical and Electronics Engineering 6EX3-01 Computer Architecture EE, EX		

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of Seven questions from Part B and Three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory.

(10×2=20)

1. Explain advantages and limitations of RISC architecture.
2. Explain different data types used in computer systems.
3. What is a system bus? Explain its types.
4. Explain the concept of virtual memory and its need.
5. Compare optical disks and magnetic disks.
6. Explain the operation of control unit.
7. Explain the difference between 16-bit and 32-bit microprocessors.
8. Differentiate between parallel port and serial port.
9. What is meant by pipelining?
10. What do you mean by Memory Management Unit?

PART - B
(Analytical / Problem Solving Questions)

Attempt any Five questions.

(5×4=20)

1. Compare CISC and RISC architectures in terms of instruction set, execution time, and hardware complexity.
2. Compare fixed-point and floating-point representation.
3. Analyze the organization of system memory and explain how it affects overall computer performance.
4. Analyze features of PCI Express that make it suitable for high-speed applications.
5. Explain Instruction Level Parallelism (ILP) and analyze how it enhances processor throughput.
6. Explain the architecture of a System-on-Chip (SoC).
7. Explain various addressing modes of 80×86 in detail.

PART - C
(Descriptive / Analytical / Problem Solving / Design Questions)

Attempt any Three questions.

(3×10=30)

1. Explain the architecture and functional units of a general computer system. Also explain input/output unit, memory unit, ALU, control unit, and their interaction during instruction execution with the help of block diagram.
 2. Describe binary multiplication and division algorithms. Also explain hardware implementation and performance considerations.
 3. What is Direct Memory Access (DMA)? Explain DMA Controller in detail with the help of suitable diagram.
 4. Explain the architecture of 8086 microprocessor in detail. Also explain block diagram, functions of Execution Unit (EU) and Bus Interface Unit (BIU), and their interaction.
 5. Explain the architecture of a Digital Signal Processor (DSP). Also explain the features in detail with suitable applications.
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