

6E7104**6E7104****B.Tech. VI-Sem. (Main/Back) Examination, April/May - 2026****Artificial Intelligence and Data Science****6AID4-04 Computer Architecture and Organization****CS, IT, AID, CAI, CDS, CCS, CIT, CSD, CSR****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. What is a cache coherence?
2. What is meant by instruction cycle?
3. What is meant by micro-operation?
4. Why do you need instruction format?
5. What do you understand by RISC?
6. What do you mean by control memory?
7. What is meant by pipelining?
8. What is auxiliary memory?
9. Define vector processing.
10. What do you mean by DMA?

PART - B
(Analytical/Problem solving questions)

(5×4=20)

Attempt any Five questions.

1. State the differences MAR and MBR.
2. Design a 4×4 ROM.
3. Design a 4×3 RAM.
4. Explain Memory transfer?
5. Is there any difference among PROM, EPROM and PLA? Explain.
6. Show propagation of multiple data processing in a pipeline.
7. Design a bus system for 4 registers.

PART - C

(Descriptive/Analytical/Problem Solving/Design questions)

(3×10=30)

Attempt any Three questions.

1. What are the arithmetic operations and how it can be implemented? Explain with diagram.
2. Design a stage of Arithmetic Unit and Logic Unit.
3. Show the steps of multiplication algorithm for 22×19 .
4. Is there any difference associative and set associative mapping related to cache memory.
5. Apply booth's algorithm for 10100×01101 .

Handwritten notes for Booth's algorithm:
 $16 \times 4 = 64$
 20×9
 $1+0+$
 $1+0+2+2+2$
 $1+4+8$
 01101