

Seat No. **OCT-NOV 2025 WINTER EXAMINATION****1154 B.Tech. CBCS****Sub. Name: Computer Organization and Architecture****Sub. Code: 63533/79141/79429****Day and Date: Tuesday ,09-12-2025****Total Marks: 70****Time: 10:30 AM To 01:00 PM**

**Instructions:** 1. All questions are compulsory  
 2. Assume suitable data wherever necessary and mention it boldly  
 3. Figures to the right indicate full marks

**Q1)** Solve any 2 of the following (7 Marks Each) **[14]**

- a. What is an Instruction Set? Explain different types of instructions used in computer architecture. Discuss the step-by-step process of instruction execution cycle (fetch–decode–execute). **[7]**
- b. Explain in detail the evolution from Second-Generation to Third-Generation computers. **[7]**
- c. Explain the Mechanical Era of computing in detail with reference to Babbage's Difference Engine and Analytical Engine. **[7]**

**Q2)** Solve any 2 of the following (7 Marks Each) **[14]**

- a. Explain DMA (Direct Memory Access) in detail. **[7]**
- b. Describe the working of a Synchronous Bus with clock diagram. **[7]**
- c. Explain the structure and functioning of I/O Interface Circuits. **[7]**

**Q3)** Solve any 2 of the following (7 Marks Each) **[14]**

- a. What are Memory-Mapped I/O ? **[7]**
- b. Describe restoring division algorithms for integer division. Provide suitable numerical example to illustrate method. **[7]**
- c. Explain working of a Carry Look-Ahead Adder (CLA). Provide a block diagram. **[7]**

**Q4)** Solve any 2 of the following (7 Marks Each) **[14]**

- a. Describe the Multiple-Bus Organization of the CPU. **[7]**
- b. Compare Hardwired Control Unit and Microprogrammed Control unit. **[7]**

c. Describe in detail the different types of hazards in pipelining. [7]

**Q5)** Solve any 2 of the following (7 Marks Each) [14]

a. Explain the basic concepts of computer memory. [7]

b. What is cache memory? [7]

c. Explain any two cache mapping techniques. [7]

## **End Of Question Paper**

**Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -**

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

- 1] (101) Bachelor of Engineering (79429) Computer Organization and Architecture Part 2 SEM 4
- 2] (1154) B.Tech. CBCS (79141) Computer Organization and Architecture Part 2 SEM 4
- 3] (101) Bachelor of Engineering (63533) Computer Organization Part 2 SEM 4