

Roll No. \_\_\_\_\_

510701

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B. Tech. V - Sem. (Main / Back) Exam., May - 2023  
Electronics & Communication Engineering  
5EC3 - 01 Computer Architecture

Time: 2 Hours

Maximum Marks: 80  
Min. Passing Marks:

**Instructions to Candidates:**

**Part - A:** Short answer questions (up to 25 words) 5 × 2 marks = 10 marks.  
All five questions are compulsory.

**Part - B:** Analytical/Problem solving questions 4 × 10 marks = 40 marks.  
Candidates have to answer four questions out of six.

**Part - C:** Descriptive/Analytical/Problem Solving questions 2 × 15 marks = 30 marks.  
Candidates have to answer two questions out of three.

Schematic diagrams must be shown wherever necessary; Any data you feel missing may 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)

1. NIL

2. NIL

**PART - A**

- Q.1 ✓ What is basic design of ALU? [2]  
Q.2 ✓ What do you mean by memory mapped I/O? [2]  
Q.3 ✓ Define subroutine. [2]  
Q.4 ✓ What do you mean by pipelining? [2]  
Q.5 ✓ Differentiate between cache and associative memory. [2]

## PART - B

- Q.1 ✓ What do you mean by interrupt? Explain various types of interrupts. [10]
- Q.2 ✓ Write Booth's algorithm with flowchart. Compute product of  $x \times y$  with Booth's algorithm where  $x = 2$  and  $y = 6$ . [10]
- Q.3 ✓ Describe the working principle of flash memory and cache memory. Explain the different mapping techniques used in cache memory. [10]
- Q.4 ✓ What is micro program control unit? Explain with diagram micro program control unit. [10]
- Q.5 ✓ What are interrupts? How are they handled? [10]
- Q.6 ✓ Why pipelining is used in computer architecture? Explain instruction pipelining. [10]

## PART - C

- Q.1 What is memory system? Give classification of memory. Describe in detail about associative memory. [15]
- Q.2 ✓ What is DMA controller? Discuss how DMA is used to transfer data from peripherals with proper illustration. [15]
- Q.3 ✓ What is meant by stack addressing? Explain in detail various addressing modes with example. [15]

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