

Dr. Babasaheb Ambedkar Open University
Term End Examination February – 2026

Course	: BCA	Date	: 16-Feb-26
Subject Code	: BCAIN-204	Time	: 03:00pm to 05:15pm
Subject Name	: Digital Electronics and Computer Organization	Duration	: 02.15 Hours
		Max. Marks	: 70

Section A

Answer the following (Attempt any three) (30)

1. What is Boolean Algebra? List and explain six types of Boolean Laws.
2. What are different logic families of integrated circuit? Explain in brief.
3. What is Flip Flop? List various Flip Flops and explain any one in detail.
4. What is Multiplexer? Explain any one type with diagram and Truth Table.
5. What is Bus? Explain types of Bus with figure.

Section B

Answer the following (Attempt any four) (20)

1. Explain Combinational Circuits in brief.
2. What are types of Addressing Modes? Explain in brief.
3. Explain Instruction Cycle with diagram.
4. What are various applications of Addressing Modes? Explain in brief.
5. What is DMA?
6. Explain Cache Memory with diagram.

Section C

Q-1. The information transfer from one register to another is called: (10)

- | | |
|---------------------|-------------------------|
| A) Microinstruction | B) Register transfer |
| C) Microprogramming | D) Instruction decoding |

Q-2. Which symbol is commonly used to denote a microoperation?

- | | |
|------------------|-----------------|
| A) $\rightarrow$ | B) + |
| C) $\oplus$ | D) $\downarrow$ |

Q-3. Which of the following is an arithmetic microoperation?

- | | |
|----------|--------------|
| A) Shift | B) Increment |
| C) AND | D) OR |

Q-4. The ALU is responsible for:

- | | |
|--------------------------|---|
| A) Storing data | B) Performing arithmetic and logic operations |
| C) Decoding instructions | D) Controlling input/output |

Q-5. In basic computer organization, the control unit:

- | | |
|--------------------------|-----------------------------------|
| A) Executes instructions | B) Generates control signals |
| C) Stores programs | D) Performs arithmetic operations |

Q-6. Which memory is volatile?

- | | |
|--------|----------|
| A) ROM | B) PROM |
| C) RAM | D) Flash |

Q-7. The 1's complement of binary 1010 is:

- | | |
|---------|---------|
| A) 1010 | B) 0101 |
| C) 1111 | D) 0000 |

Q-8. A flip-flop is a basic element of:

- | | |
|---------------------------|------------------------|
| A) Combinational circuits | B) Sequential circuits |
| C) Decoder | D) Multiplexer |

Q-9. In memory organization, the smallest unit of storage is:

- | | |
|---------|-------------|
| A) Word | B) Byte |
| C) Bit | D) Register |

Q-10. Which digital circuit selects one input line and directs it to a single output line?

- | | |
|----------------|------------------|
| A) Decoder | B) Encoder |
| C) Multiplexer | D) Demultiplexer |

Part – B (State whether the following statements are true or false)

(10)

- 1 Register transfer language (RTL) describes the operations in terms of microoperations.
- 2 Arithmetic microoperations include addition, subtraction, increment, and decrement.
- 3 The Control Unit in a CPU is responsible for performing arithmetic operations.
- 4 RAM is a non-volatile memory.
- 5 2's complement is obtained by inverting all bits and adding 1.
- 6 Flip-flops can store only one bit of data.
- 7 A decoder has multiple inputs and exactly one output active at a time.
- 8 The Program Counter (PC) stores the address of the next instruction.
- 9 Multiplexer is also known as a data selector.
- 10 ROM contents can be changed during normal computer operation.
