

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

Course	: BSCIT	Date	: 21/02/2026
Subject Code	: BSCIT-401	Time	: 03:00pm to 05:15pm
Subject Name	: Digital Electronics	Duration	: 02.15 Hours
		Max. Marks	: 70

Section A

Answer the following (Attempt any three)

(30)

1. Define Number Systems. Explain the process of converting a Decimal number to Binary, Octal, and Hexadecimal with examples.
2. What are Logic Gates? Explain the working of AND, OR, NOT, NAND, and NOR gates with their truth tables and logic diagrams.
3. Explain the concept of Flip-flops. Discuss the working and characteristic table of the D Flip-flop and RS Flip-flop.
4. Describe the architecture of a Basic Computer. Explain the different phases of an Instruction Cycle (Fetch, Decode, and Execute).
5. What is Memory Hierarchy? Compare and contrast SRAM and DRAM in detail.

Section B

Answer the following (Attempt any four)

(20)

1. Differentiate between System Software and Application Software.
2. Explain the Excess-3 code and Gray code with suitable conversion examples.
3. What is a Multiplexer? Explain its role as a combinational circuit in digital systems.
4. Define "Propagation Delay" in the context of Binary Counters. Why is it considered a disadvantage?
5. Explain the concept of Virtual Memory and how it provides an "illusion" of large memory to programmers.
6. What is an Encoder? How does it differ from a Decoder?

Section C

Part – A (Multiple Choice Questions)

(10)

- 1 Which software is essential for a computer to work?
A. Application Software B. System Software C. Utility Software D. None
- 2 The Hexadecimal representation of the Decimal number 15 is:
A. E B. F C. A D. 10
- 3 Which gate is known as a "Universal Gate"?
A. AND B. OR C. NAND D. NOT
- 4 In a D Flip-flop, if the D input is High and the Clock is High, the output (Q) will be:
A. Low B. High C. No Change D. Invalid
- 5 SRAM is typically used for which type of memory?
A. Main Memory B. Cache Memory C. Auxiliary Memory D. Virtual Memory
- 6 Which code is a non-weighted code?
A. BCD B. Binary C. Excess-3 D. Decimal

- 7 The process of fetching an instruction from memory is handled by:
A. ALU B. Control Unit C. Input Unit D. External Storage
- 8 Which memory is constructed using tiny capacitors that leak electricity?
A. SRAM B. ROM C. DRAM D. Magnetic Disk
- 9 What does "BCD" stand for?
A. Binary Coded Decimal B. Bit Coded Digit C. Base Coded Decimal D. None
- 10 A circuit that performs the inverse operation of an Encoder is:
A. Multiplexer B. Flip-flop C. Decoder D. Register

Part – B (Do as Directed)

(10)

State whether the following statements are true or false

- 1 Application software executes all the time in a computer.
- 2 The base of the Octal number system is 8.
- 3 A NAND gate output is low only when all inputs are high.
- 4 DRAM is faster than SRAM.
- 5 Virtual memory allows a large program to run in a small physical memory.
- 6 A Shift Register is a type of combinational circuit.
- 7 BCD and Gray code are the same thing.
- 8 Cache memory is organized into blocks or lines.
- 9 The execution of instructions is part of the instruction cycle.
- 10 Hardware refers to the physical components of a computer.
