D5BCS2301 **Reg. No.....**

Name: .....

FIFTH SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2025

(Regular/Improvement/Supplementary)

COMPUTER SCIENCE

GBCS5B07T: COMPUTER ORGANIZATION AND ARCHITECTURE

Time: 2 Hours **Maximum Marks: 60**

SECTION A: Answer the following questions. Each carries *two* marks.
(Ceiling 20 marks)

1. Draw the logic gate and truth table of "AND gate".
2. What is Ring Counter?
3. What are the different types of instructions?
4. Differentiate between NOR gate and OR gate.
5. What is serial in- parallel out shift register?
6. Define the three address instruction format with example.
7. What is the need for registers? Define MAR.
8. What is SR latch?
9. State the use of control memory.
10. Differentiate between multiplexer and demultiplexers.
11. Define hit and miss ratio.
12. What is program control instruction? List different program control instructions.

SECTION B: Answer the following questions. Each carries *five* marks.
(Ceiling 30 marks)

13. Explain full Adder with combinational circuit.
14. Discuss the working of JK Flip Flop.
15. Explain various addressing modes.
16. What is instruction cycle? Explain various steps in instruction cycle.
17. Write a short note on strobe control and handshaking method.
18. What are fundamental components of a micro-programmed control unit? Explain steps involved to execute a micro-instruction.
19. Illustrate with diagram the design of Accumulator logic.

SECTION C: Answer any *one* question. The question carries *ten* marks.

20. a) Explain the working of ripple carry adder.

    b) Explain up/down counter.

21. What do you mean by cache mapping? Illustrate with example.

(1 × 10 = 10 Marks)