



ST. FRANCIS DE SALES COLLEGE

A FRANSALIAN INSTITUTE OF HIGHER EDUCATION **AUTONOMOUS**

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END SEMESTER EXAMINATION –NOV/DEC 2025

COMPUTER SCIENCE – I SEMESTER BCA (Repeaters)

24BCA15: COMPUTER ARCHITECTURE

Time: 3 Hours

Max. Marks: 80

Instruction: Answer should be written completely in English.

SECTION – A

Answer any **FIVE** questions. Each question carries **TWO** marks.

(5X2=10)

1. Convert the decimal number 65 to its binary & octal.
2. Convert the following Binary code **10101** to Gray code.
3. Define Sequential Circuit.
4. What is an encoder in digital circuits? Give one example.
5. Define the term 'Instruction Code'.
6. List the interrupt signals of 8085 Microprocessor.
7. List the types of addressing modes used in the 8085 microprocessors.
8. Define CMP instruction.

SECTION - B

Answer any **SIX** questions. Each question carries **FIVE** marks.

(6X5=30)

9. Convert the hexadecimal number $(A46)_{16}$ to its binary, octal and decimal equivalents.
10. Design the logic circuit for the Boolean expression: $(A + B)C + (AB)$.
11. Explain the design and working of a Full Adder circuit. Provide its truth table.
12. Illustrate the construction and operation of a 4-to-1 Multiplexer with a truth table.
13. Explain the concept of Instruction Cycle and its phases with a brief description of each.
14. Discuss the types of Addressing Modes used in a CPU with examples for each type.
15. Discuss the classification of 8085 instructions based on word length and function. Provide examples.
16. Illustrate the working of five different data transfer instructions used in 8085 using examples.

SECTION – C

Answer any **FIVE** questions. Each question carries **EIGHT** marks.

(5X8=40)

17. Discuss the various number system conversions (Decimal to Binary, Binary to Hexadecimal, Octal to Decimal) with detailed examples.
18. Simplify the following Boolean function using a four-variable K-map. Also, draw the logic diagram of the original and simplified circuit: $F(A,B,C,D) = \sum(0,2,4,6,7,8,10,13,15)$.



19. Illustrate the working of a 3-to-8 Line Decoder and its applications in digital systems.
20. Draw the architecture of 8085 Microprocessor and explain the functional blocks.
21. Explain the pin configuration of 8085 microprocessor with a neat diagram.
22. Discuss the classification of 8085 instructions based on their functionality with appropriate examples for each category.

