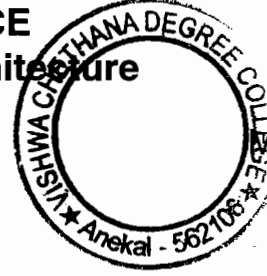**I Semester B.C.A. (Full Stack Development) (AI and ML) (Data Science) Examination, January 2025**
(SEP – 2024 – 25)
COMPUTER SCIENCE
24BCA13 : Computer Architecture

Time : 3 Hours

Max. Marks : 80

Instruction : Answer **all** Sections.

SECTION – A

Answer **any 8** of the following. (8×2=16)

1. Write different types of number system.

2. Convert $1F_{(16)}$ to decimal.

3. Give the logic symbol of AND gate and draw the truth table.

4. State De-Morgans theorems.

5. List the characteristics of combinational circuits.

6. List the registers of a basic computer system.

7. Define stack pointer.

8. List any 2 advantages and disadvantages of assembly language.

9. What are the types of microprocessors ?

10. List the addressing modes of 8085 microprocessor.

SECTION – B

Answer **any 4** of the following. (4×6=24)

11. Simplify $F(A,B,C,D) = \Sigma m\ (1,2,4,5,6,8,9) + \Sigma d\ (10,11,14,15)$ using K-map.

12. Explain full adder with a neat diagram. Draw the truth table.

13. What is a shift register ? Explain the types of shift register.

14. Explain the basic computer instruction formats.

P.T.O.

15. What is an addressing mode ? Explain the various addressing modes of 8085 microprocessor.

16. Differentiate between RISC and CISC.

SECTION – C

Answer **any five** questions : (5×8=40)

17. Draw the flowchart for interrupt cycle.

18. a) Convert $1934_{(8)}$ to binary.

    b) Subtract 14 from 24 using 2's complement.

19. Prove that NAND and NOR are universal gates.

20. Explain the SR Flip-Flop with a neat logic diagram.

21. Explain 4 to 1 line multiplexer with a neat logic diagram.

22. Explain architecture of 8085.

23. Explain registers in 8085.