Time : 4 Hrs   **Full Marks : 100**

Instructions:
*Answer **Question 1** and any **eight** from the rest.*

Question 1: *Answer any **ten** questions*: $2 \times 5 = 10$

    a. Differentiate between microprocessor and microcontroller?
    b. Which interrupts are generally used for critical events?
    c. What is an Op code?
    d. Explain the difference between a JMP and CALL instruction?
    e. What is a microprogram?
    f. What do you understand by computer peripherals? Name any 5 peripherals.
    g. What is RISC?
    h. Differentiate between duplex and half duplex communication.
    i. What is a port?
    j. Define polymorphism.
    k. What is namespace in C++ programming?
    l. What is a data dictionary?
    m. Why is software testing needed?
    n. What is a pixel?
    o. What are the properties of a relation in 3NF?
    p. What is a view?

Question 2:   3+3+2+2

    a. Assume that the accumulator contents data bytes 88H and instruction MOV C, A 4FH is fetched. List the steps decoding and executing the instruction.
    b. Define Instruction cycle and Machine cycle.
    c. What is Subroutine?
    d. If the frequency of the crystal connected to 8085 is 6 MHz, calculate the time to fetch and execute NOP instruction.

Question 3:   3+3+2+2

    a. Draw and explain the timing diagram of op code fetch cycle.
    b. Differentiate SIM and RIM?
    c. Write an instruction to enable all the interrupts in 8085 system.
    d. Give the difference between JZ and JNZ?

Question 4: $5+5=10$

    a. Discuss parallelism in microinstructions using examples.

    b. Compare and Contrast between RISC and CISC.

Question 5: $8+2=10$

    a. Explain with a diagram the OSI model.

    b. What are the disadvantages of twisted-pair cables?

Question 6: $(4+4)+2=10$

    a. Write notes on:

        (i)   ISP   (ii)   FDM

    b. What is a browser?

Question 7: $5+5=10$

    a. Explain the concept of function templates with the aid of a C++ program.

    b. What are the characteristics of an Object Oriented Programming Language.

Question 8: $3+7=10$

    a. What is operator overloading? Name the operators that cannot be overloaded.

    b. Write a C++ program to depict overloading of any unary operator. Explain your program with the aid of a sample output.

Question 9: $8+2=10$

    a. Explain the classical model of software development with diagram.

    b. What is a prototype?

Question 10: $(2+2)+(1+5)=10$

    a. What is a DFD? Name the purpose of each symbol used in a DFD.

    b. What is a context diagram? Draw a context diagram for Student Admission System.

Question 11: $5+5=10$

    a. What is Scaling? Explain with an example.

    b. Discuss the applications of Computer Graphics..

Question 12: $4 + 3 + 3 = 10$
  a. What do you understand by Homogeneous Coordinates?
  b. What is Morphing?
  c. Write notes on Animation.

Question 13: $8 + 2 = 10$
  a. Discuss the ANSI/SPARC Architecture of DBMS.
  b. What is a primary key?

Question 14: $6 + 4 = 10$
  a. Discuss Network and Hierarchical Models of DBMS.
  b. Write notes on Relational Algebra.