

Question Paper

Exam Date & Time: 05-Dec-2023 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATIONS NOVEMBER/DECEMBER 2023 I SEMESTER B.Sc. (APPLIED SCIENCES) IN ENGG.

PROBLEM SOLVING USING COMPUTERS [ICS 111 - S2]

Marks: 50

Duration: 180 mins.

Answer all the questions.

Missing data, if any, may be suitably assumed

- 1) Differentiate between Machine level language and higher level language (MLL & HLL). [Any three points.] (3)
 - A)
 - B) Draw a flowchart to find all type of roots of a quadratic equation. (4)
 - C) Write an algorithm to find factorial of a given number. (3)
- 2) Give snap shots of binary search of element 45 in the array: [Algorithm/ Program Not required (5)
 - A) 10, 12, 25, 40, 47, 50
 - B) Write a complete C++ program to delete all duplicate elements of a given 1D array. (5)
- 3) Write a complete C++ program to count number of words in a given string (4)
 - A) .
 - B) Write a complete C++ program using function, `mat_cal(int b[n][n], int)` to determine sum of even elements and trace of a given nxn matrix. [`main()` should perform reading of matrix and `mat_cal(int b[n][n], int)` calculate and display the result.Trace is defined as the sum of all the principle diagonal elements of the matrix.] (6)
- 4) Define a structure "Student" with data members: `st_ID` and `CGPA`. Declare an array to hold n students' record. Display the array in the sorted order on the basis of `CGPA`. Write Complete C++ program to demonstrate the same. (6)
 - A)
 - B) What is call by reference? Define function `swap()` do demonstrate the effect of call by reference. [Explain with the help of a complete C++ program.] (4)

- 5) Define a class "Time" with data members: hr, min, sec and member functions: add() and display() [prototype : Time add(Time, Time), void display(void)]. Write a complete C++ program to find sum of two Time objects and to display the result. [Program should demonstrate abstraction to keep time object in the format of time] (7)
- A)
- B) What is inline function? Write complete C++ program to calculate area of a cube with the help of an inline function. [Area of a cube = 6 * side * side] (3)

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