Question Paper

Exam Date & Time: 21-Nov-2019 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES
END SEMESTER THEORY EXAMINATIONS
NOVEMBER-2019
I SEMESTER B.Sc. (Applied Sciences) in Engg.
PROBLEM SOLVING USING COMPUTERS [ICS 111]

Marks: 100 **Duration: 180 mins.**

Answer 5 out of 8 questions.

1)	A)	Differentiate between Machine level language and High level language.(Any four points)	(4)
	B)	Write an algorithm to find all types of root of a quadratic equation. It should display the roots in appropriate format.	(10)
	C)	What do you mean by type conversion? In which situation you need to type cast explicitly?	(6)
2)	A)	Write short note on: i) Reference variable ii) Conditional Operator (Ternary Operator)	(10)
	B)	Differentiate between exit control and entry control loop with the help of flow chart and example code. (Example code should be logically complete).	(10)
3)	A)	What are the different ways of initialization of 1D and 2D arrays? Explain each of them with syntax and example.	(10)
	B)	Write short note on: i) Literal ii) Symbolic Constant	(10)
4)	A)	Differentiate between call by value and call by reference. Support your answer with the help of an example program and output of the program.	(10)
	B)	Draw snap shots for Binary Search for the following data: 5, 7, 20, 25, 40, 80, 83, 90, 100, 105 Search for: 25	(10)
5)	A)	Write a complete C++ program to delete an element from the 1D array. The array should be populated at runtime and index of element to be deleted should also be dynamically inputted.	(8)
	B)	Write a complete C++ program to input a string and toggle the case of each character in the input string.	(4)

C) Write a complete C++ program to find whether a given matrix is symmetric or not. The program should perform reading of the matrix element, check for square matrix and should display output "symmetric" or "non-symmetric". (8)

6) What are the different categories of functions? Explain any two of them with their prototype and complete C++ example program. (10)

A)

B) Overload a function Area to compute the area of a square, rectangle and triangle. Write a main( ) function to test the function. (10)

7) Define the Student structure with name, id and cgpa as data members and input( ), display( ) as member function. Create an array to hold n Student records and demonstrate utility of the member functions in the main( ) function. Students' record should be sorted on the base of id and sorted records should be displayed in the main( ) function. (12)

A)

B) What is a pointer? Write a complete C++ program to display array elements with the help of a pointer. (8)

8) Define a class Complex to represent a complex number. Include the following members: (15)

A)

Data members:

a) Real

b) Imaginary

Member functions:

a) to assign initial values

b) to display complex number in a suitable format

c) to add two complex numbers with complex return type.

Write main( ) function to test the class.

B) Write short note on: (5)

i) Inheritance

ii) Polymorphism

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