Roll No.

Time: 3 Hours   Answer ALL Questions   Max. Marks: 100

PART - A(10 x 2 = 20 Marks)

1. Is it possible to compare two pointer variables? Illustrate using an example

2. List the different modes in which a file can be opened.

3. How does C++ class differ from structures in C?

4. Give a simple function that demonstrates the use of a unique pointer, which is automatically passed to a member function when it is invoked.

5. List the advantages of overloading.

6. Explain the significance of different access specifiers used in inheritance

7. Exemplify the use of reinterpret_cast operator

8. What is the difference between function overloading and templates?

9. Write the significance of Iterators in STL containers.

10. How does a map differ from list?

PART- B(5 x 16 = 80 Marks)
(Qn. 11 is Compulsory)

11. Answer the following .
    A. Copy constructor and Dynamic constructor.   (4)
    B. List those operators that can be and cannot be overloaded in C++.   (4)
    C. "Only destructors can be made virtual". Justify your answer.   (2)
    D. When will you make a function Inline. Write an inline function to find the maximum of three numbers.   (4)
    E. Is there any way to access class private members without its object? Justify your answer. (2)

12. a) i) Write a program that demonstrates the use of static data member, static member function and array of objects.   (10)
    ii) What is an array of pointers ? And how does it differ from pointer to an array? Illustrate with an example.   (6)

(OR)

b) i) Write a C program to calculate the net salary of an employee with structure members as Name, Empid, Basic pay, Da(10% of Basic pay), Ta(12% of Basic pay). Create a pointer pointing to an array of 10 employees. Write a display function to display the details of employee who is getting the highest salary based on their annual income using pointers. Also write an update function to modify the annual income by deducting IT(use structure pointer as function argument). (10)

ii) Write a C program to store 5 names in a text file. Display the same. Append 2 names and display the byte position of 6th name. (6)

13. a) i) Create a base class named, 'shape' with two members base and height, a member function for initialization and a virtual function to compute area(). Derive two specific classes Triangle and Rectangle which override the function area(). Use these classes in main function and display the area of triangle and rectangle using virtual functions. (12)

ii) Brief about Abstract base class and Virtual base class with suitable syntax. (4)

(OR)

b) Write a program that has a class Train with data members- no_of _seats_1st, no_of seats_2^{Tier}, no_of seats_3^{Tier} and member functions to set and display data. Derive a class Reservation that has data members- seats_booked_1st, seats_booked_2^{Tier}, seats_booked_3^{Tier}- and functions to book and cancel tickets, and display the status. (16)

14. a) i) List out the advantages of class and function templates. (4)

ii) Write a generic function to perform linear search on an array (12)

(OR)

b) Write a program that has a class Matrix, overload the += operator, and throws an exception if number of rows and columns of the two matrices are not equal. (16)

15. a) i) Write a program that reads a file and copies its contents in another file. While copying, replace all full stops with commas. (8)

ii) Write a program to reads a file that contains integers. Read the integers and categorize them as even or odd. Store all even integers in a file called EVEN.TXT and all odd numbers in ODD.TXT (8)

(OR)

b) i) Write a program that demonstrates the use of different cast operators. (8)

   ii) Write a program to implement Vectors in STL which includes the following operations.

        - push_back( )

        - pop_back( )

        - begin( )

        - end( ) (8)