203 : Object Oriented Programming

Unit : 1 **[25%]**

Fundamentals of programming

Concept of Procedural, structured and object oriented programming, Concept of Encapsulation, Abstraction, Data hiding, Inheritance, Operator Overloading and Polymorphism, History of C++ and its object-oriented programming over procedural languages, Classes and objects, Advantages of object-oriented programming over procedural languages, parts of C++ program, Data types, variable and constants, Expression and statements, logical, relational, mathematical operators, turnery operator, Simple I/O statements- reading and writing. Statement for formatted I/O, Usage of header files using INCLUDE statement

Unit : 2 **[25%]**

Array, Structures, Classes and Functions

Looping: While... Do. While, for loop, Continue and break statement, Switch statement, IF statement, IF...ELSE statement, Array: Initializing one-dimensional and two-dimensional array. Multidimensional array, Passing arrays to functions, Array classes, Structures and Enumerated data types : Declaration of Structure, Initialization of structures, Array of structure and pointers to structure , Structures within Structures, Classes: Implementing class, Classes and members. Accessing class members, implementing class methods, constructors and Destructors, Private and public class, Function: Fundamental, passing structure variable to function, pass by value, pass by reference, overloading of function, Inline function, static variable and static function, friend function , friend class

Unit : 3 **[25%]**

Pointer, Operator Overloading and Type Conversions

Pointer: concept of a pointer variable and its declaration, Pointer arithmetic, Pointers in string handling, Pointers to pointer, Arrays of Pointers, Pointers and array names, Dynamic Memory allocations, Pointers to objects, Operator Overloading and Type Conversions: Introduction, Overloading Unary and Binary Operators, Overloading Binary operators using friends, Type Conversions

Unit : 4 **[25%]**

Inheritance, Virtual Functions and File Management

Inheritance: Introduction, defining derived class, single inheritance, multilevel , multiple hierarchical, hybrid inheritance, containership Virtual Functions: static and dynamic binding, virtual base class, constructer in derived class, pointer to derived class, virtual and pure virtual function, Abstract classes, Copy constructor, this pointer, File Management: c++ streams, c++ stream classes, Opening and closing a file, File modes, File pointers and their manipulations, Sequential Input and Output Operations, Random Access

Reference Books:

1. Object-Oriented Programming with C++ By E. Balagurusamy- TMH Publication
2. Object-Oriented Programming in Turbo C++ By Robert Lafore- Galgotia
3. Object Oriented Programming & C++ By Rajaram- Comdex.

203: Object Oriented Programming [Practical List]

1. Write a cpp program which explains the use of a scope resolution operator.
2. Write a cpp program which explains the use of a manipulators operator.
3. Write a cpp program to swap two integer numbers with use of reference variable.
4. Write a cpp program to calculate factorial using inline function.
5. Write a cpp program to calculate volume of cylinder and rectangle using function overloading.
6. Write a cpp program for a simple class implementation.
7. Write a cpp program to find out max and min number from given two integer using nesting of member function. (one function call another function).
8. Write a cpp program for arrays within a class. (how to use a array in a Class).
9. Write a cpp program to implement static member.
10. Write a cpp program which generates the pay-slip of 5 employees of AB organization using concept of a "array of object".
11. Write a cpp program to calculate simple interest using default argument.
12. Write a cpp program to find out max number from given two integer using friend function.
13. Write a cpp program to find out max number from given two objects using friend function.
14. Write a cpp program of a swapping private data of classes.
15. Write a cpp program which explain concept of a returning objects.
16. Write a cpp program to find out sum of 1 to n number using constructors.
17. Write a cpp program for concept of overloaded constructors.
18. Write a cpp program to copy one object to another using copy constructor.
19. Write a cpp program to copy one string to another using new operator.
20. Write a cpp program of implementation of destructors.
21. Write a cpp program to overload the unary minus operator using friend function and member function.
22. Write a cpp program to overload the binary plus operator using friend function and member function.
23. Write a cpp program for implementation of mathematical operations on strings. {overloads two operators + and <=}
24. Write a cpp program for implementation of a single inheritance of public data member.
25. Write a cpp program of virtual base class.
26. Write a cpp program for implementation of array of pointer to objects.
27. Write a cpp program for implementation of this pointer.
28. Write a cpp program for implementation of virtual function.
29. Write a cpp program which explain a concept of runtime polymorphism.
30. Write a cpp program of working with single file.
    (creates a file with constructor function).
31. Write a cpp program of working with multiple files
    (creates a file with open( ) function).
32. Write a cpp program of reading from two files simultaneously.
33. Write a cpp program of input output operations on characters
    (uses put() and get() function).
34. Write a cpp program of input/output operations on binary files.
35. Write a cpp program which explain the concept of command line arguments.