ENROLLMENT NO._____ ROLL NO._____

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Examination: Odd Semester Examination 2022

Paper Name: Introduction to Object Oriented Programming **Paper Code:** BCA-301
Time: 3 Hours **Maximum Marks:** 75

**Note: Mobile Phone/ programmable calculator/any smart device are not allowed inside the Examination Hall. Follow proper numbering for answering the questions.*

SECTION: A (35 Marks)

All questions are compulsory 35x1=35

Q.No.	Questions	CO	BL
1	The keyword _____ is used to declare named _____ which are just like variables except that their values cannot be changed.		
2	*cin* and *cout* are the _____ (a) objects (b) macros (c) operators (d) functions		
3	The null character needs a space of _____byte(s).		
4	When a program is executed, the _____ interact by sending a message to one another. (a) class (b) memory (c) objects (d) operating system		

5	Predict the output of the following program:
	`int sum(int x = 0, int y = 0, int z)`
	`{ return (x + y + z); }`
	`int main(){`
	`cout << sum(100);`
	`return 0;}`		

6	Objects are the variables of the type _____.		
7	A variable declared in a function is called a _____ variable.		
8	Which of the following cannot be passed to a function in C++? (a) Header file (b) constant (c) array (d) structure		
9	By default the members of a _____are private whereas that of _____ are public.		
10	What does *this* pointer point do?		
11	Which of the operators cannot be overloaded?		
12	Among the Comparison Operator (==) and Assignment Operator (=), which of the operators are overloaded by default by the compiler in every user defined classes even if user has not written? (a) Only '=' (b) Only '= =' (c) both '=' and '= =' (d) None		
13	In C++, _____ is the insertion operator whereas _____ is the extraction operator.		
14	Which of the following is not a member of the class: (a) const function (b) static function (c) friend function (d) virtual function		
15	Which of the following functions can be inherited from the base class: (a) static function (b) constructor (c) destructor (d) none		
16	Which of the followings is/are automatically added to every class, if we do not write our own? (a) default constructor (b) copy constructor (c) assignment operator (d) All		
17	A function that is called automatically each time an object is destroyed is a _____.		
18	In which type of inheritance does one class act as a superclass for more than one sub-class?		
19	_____ is a member function of the class that doesn't consist of any return type.		
20	Which one of the following is not the characteristic of a constructor? (a) It cannot be inherited (b) It can be virtual (c) It is called automatically (d) It cannot be referred by its address		
21	_____ is used to implement late binding.		

22	Can a constructor be virtual? (Yes/No)		
23	Can a destructor be virtual? (Yes/No)		
24	Select the option below for which instance of the class cannot be created: (a) nested class (b) anonymous class (c) abstract class (d) parent class		
25	Constructor function cannot be constant. (True/False)		
26	The object can be passed as a function. (True/False)		

27	Predict the output of the following C++ program:
	`class Student {int x; };`
	`int main(){`
	`Student s;`
	`cout << s.x;`
	`return 0;}`		

28	A feature of the OOPs that described the reusability of code is _____.		
29	During the inheritance, the most secure access specifier is: (a) public (b) protected (c) private (d) all		
30	What is the use of *this* pointer?		
31	_____ is a mechanism of combining more than one data members and member functions that implement on those data members into a single unit.		
32	The feature that allows the same operations to be carried out differently depending on the object is _____.		
33	To hide a data member from the program, you must declare the data member in the _____ section of the class.		
34	The feature that allows you to use the same function name for separate functions that have different argument lists is called _____.		
35	The mechanism of given special meaning to an operator is called_____.		

SECTION-B

Attempt any FOUR Questions. **(5x4=20 Marks)**

Q.No.	Questions	CO	BL
1	Explain the working of insertion and extraction operators in C++.		
2	Explain the use of copy constructor with a suitable example in C++.		
3	Define a pointer. What's the use of *this* pointer? Write a C++ program to swap two numbers using a pointer.		
4	What is a virtual base class? Define with the help of a suitable example.		
5	When and why will you make a function inline? How does an inline function differ from a preprocessor macro?		
6	What is a virtual function? Why do we need it? Explain with a suitable example.		

SECTION-C

Attempt any TWO Questions. **(10x2=20 Marks)**

Q.No.	Questions	CO	BL
1	Explain the concepts and benefits of different programming paradigms. Write a C++ program to create a class **Rectangle** with the various member variables and a member function to calculate the area of the rectangle. Member function should return a value. Instantiate **Rectangle** class to create objects as myrect1, myrect2, and so on till myrect5. Accept input from the user to initialize the objects. Use the *switch-case* statement to find which rectangle is the largest.		
2	What do you mean by data abstraction and data encapsulation? Define a class named **Account** with the data members as account_number, name_of_depositor, account_type, and account_balance; and member functions to initialize the members, to deposit the amount, to withdraw the amount, and to display the balance. Write a C++ program to test the **Account** class for 10 customers.		
3	Define inheritance. List out the ways in which inheritance can be implemented in C++. Create a class **Student** with the data members namely roll number, name, and branch. Create another class **Exam** with the data members namely roll number and marks in five different subjects. Create a class named **Result** with the data members as total marks and results. Derive the **Result** class from the **Student** and **Exam**.		
4	What do you mean by polymorphism? With the help of suitable examples, explain how different types of polymorphism are achieved in C++.		

Course Outcomes (CO): from syllabus, BL* - Bloom`s Taxonomy Levels (1: Remembering, 2: Understanding, 3: Applying, 4: Analyzing, 5: Evaluating, 6: Creating)