Name: Enrolment No:	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: OOPs with C++ **Semester: II**
Program: BCA
Course Code: CSBC1004
Time: 03 hrs. **Max. Marks: 100**

Instructions: Students are supposed to assume any missing data and has to give examples/draw diagrams wherever applicable

SECTION A [20 Marks]

S. No.		Marks	CO
Q1	Compute the sum of first 20 odd numbers using a C++ program.	4	CO1
Q2	What is operator overloading in C++?	4	CO2
Q3	What is inheritance path?	4	CO3
Q4	Contrast between private and protected access specifiers of C++.	4	CO4
Q5	Demonstrate while and do-while loop through a small C++ program.	4	CO1+ CO2
SECTION B [40 Marks] (Attempt any one question from 9 or 10)			
Q6	Demonstrate use of all 'access specifiers' using C++ code.	10	CO3
Q7	Explain concept of Function overloading and Overriding in C++.	10	CO3+ CO4
Q8	Can we access private data member of a class in another class? If yes, explain the way of accessing the private data with example and if No, why?	10	CO4
Q9	Briefly discuss the features of OOPs in C++.	10	CO3+ CO4
	OR		
Q10	Illustrate ambiguity in C++. Demonstrate using a program to show and to remove ambiguity in a C++ program.	10	CO3+ CO4
SECTION-C [40 Marks] **Note*** Q11 is compulsory and attempt any one question from Q12 and Q13			
Q11	Inheritance in C++ is one of the most important feature of OOPs. How? Design a C++ program that can demonstrate all the types of inheritance. Explain the working of inheritance along with its types. Show the output of your program.	20	CO3,CO4
Q12	Design and implement the Friend function in your C++ program. [10] Design and implement Operator overloading using C++ program and explain.[10].	20	CO3,CO4
	OR		
Q13	Implement the given scenario: Class Rectangle with 'length' and 'breadth' as data members.	20	CO3,C

	Class Triangle with ‘side1’, ‘side2’ and ‘side3’ as data members. Create suitable constructor functions to depict the concept of function overloading in Rectangle and Triangle. [10] Through a C++ program show the behavior of constructor and destructor during inheritance execution.[10]		**O4**

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SECTION A [20 Marks]

S. No.		Marks	CO
Q 1.	Contrast between C and C++ programming language.	4	CO1
Q 2.	Compute the sum of elements of an array, ARR[10] using public member function.	4	CO2
Q 3.	Explain the use of scope resolution operator in C++ with a proper syntax.	4	CO3
Q 4.	What do you understand by 'inheritance path'?	4	CO4
Q 1.	What is exception handling in C++?	4	CO5
SECTION B [40 Marks] (Attempt any one question from 9 or 10)			
Q6	Illustrate abstraction and encapsulation properties of OOPs. Demonstrate the concept of data hiding through a C++ program.	10	CO3
Q7	Demonstrate polymorphism using C++ program along with output.	10	CO3+ CO4
Q8	Demonstrate sum of two matrix M1[3][3] and M2[3][3] applying OOPs concepts.	10	CO4
Q9	Write a program using OOPs in C++ to read and print the elements of an array using pointers. The program must contain two member functions **read()** and **print()**. You must define the member functions outside the class.	10	CO3+ CO4
	OR		
Q10	Write a program to demonstrate the working of different types of inheritance used in C++. You must also show implementation of Constructor and destructor in your code.	10	CO3+ CO4

SECTION-C [40 Marks] **Note*** Q11 is compulsory and attempt any one question from Q12 and Q13			
Q11	Write a program to find the grade of a student by creating a Class **Student** with the data members; variable **Stu_No , Stu_Name,** and marks in 15 subjects . (Note if any one of the subject marks <50 then grade is "Fail" marks>=90 then grade is "A"). Try to use all the concepts of OOPs that you have learnt yet. [Hint: Constructor, Scope resolution operator, Inheritance, etc.]	**20**	**CO3,CO4**
Q12	Demonstrate the mechanism of Exception Handling in C++ with a suitable example.[10] Demonstrate any of the one mechanism to resolve the ambiguity in Multiple Inheritance. [10]	**20**	**CO3,CO4**
	OR		
Q13	Design and implement the program that is able to demonstrate the process of operator overloading. [10] Demonstrate the implementation of various access specifiers used in C++ with explanation. [10[	**20**	**CO3, CO4**