Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2018

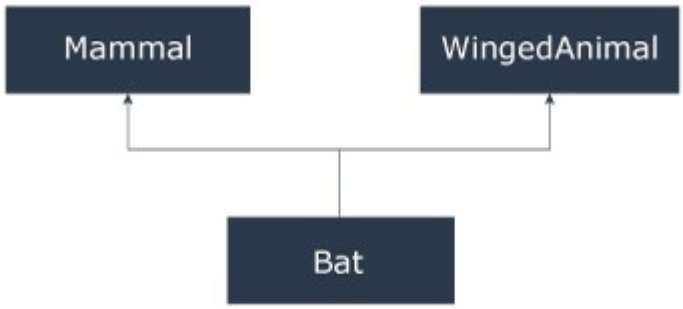
Course: OOPS with C++ **Semester: 3rd**
Programme: Mechatronics CSEG 2001
Time: 03 hrs. **Max. Marks: 100**
Instructions:

SECTION A

S. No.		Marks	CO
Q 1	Explain the use of objects in c++ with the help of relevant example?	4	CO1
Q2	How is polymorphism different from inheritance. Give one use case?	4	CO2,CO3
Q3	Define Encapsulation and state its types? Give relevant examples?	4	CO1
Q4	What is an exception in C++? How they are handled? Explain with suitable examples?	4	CO3
Q5	How is dynamic binding different from static binding? Give an example of the same?	4	CO3

SECTION B

Q 6	What is user defined manipulators? Illustrate with sample program.	10	CO4,CO1
Q7	Define briefly fstream? Show with the help of an example the use of fstream for opening, updating and closing a file?	10	CO4
Q8	Explain diamond problem in multiple inheritance? Provide a relevant solution to the diamond problem?	10	CO2,CO3,Co4
Q9	Perform function overloading on the following: Create a function Add that adds 2 number. This function should be overloaded for scenario's: 1. When both the numbers are integer 2. When both the numbers are float OR Perform operator overloading on + over the complex numbers scenario.	10	CO4, CO3

SECTION-C			
Q 10	Why is class called as a blue print of object? Design a class called plane with the following methods: 1. getFuel: once this method is called. Print “fuel required” 2. getSpeed: once this method is called. Print “500 mph” 3. setSpeed: once this method is called take user input for the speed he wants to set. Call all these methods from main in the same order as in question.		**CO4, CO3**
Q11	Define multiple inheritance? Write the code for the following inheritance:  Output of each call should be class name? Or Define base class, intermediate class and derived class with the help of a family tree? Also write the code for the inheritance?		**CO2, CO3, CO4**

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Name of the School (Please tick, symbol is given)	:	**SOE**	☐	**SOCS**		**SOP**	
Programme	:	**Mechatronics**					
Semester	:	**3rd**					
Name of the Course	:	**OOPS with C++**					
Course Code	:	CSEG 2001					
Name of Question Paper Setter	:	**Dr. Aviral Sharma**					
Employee Code	:	**40001814**					
Mobile & Extension	:	**9419165244/9596796929**					
Note: Please mention additional Stationery to be provided, during examination such as Table/Graph Sheet etc. else mention "NOT APPLICABLE":							

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Note: - Pl. start your question paper from next page

Model Question Paper (Blank) is on next page

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Instructions: Not Applicable

SECTION A

S. No.		Marks	
Q 1	How is C++ different from C?	**4**	**CO1**
Q2	Explain operator overloading with the help of an example?	**4**	**CO3**
Q3	Define throw, try and catch? Give a relevant example with code for this?	**4**	**CO3, CO4**
Q4	How is polymorphism different from inheritance. Give one use case?	**4**	**CO2,CO3**
Q5	Explain the use of objects in c++ with the help of relevant example?	**4**	**CO1**

SECTION B

Q6	Define briefly and demonstrate the use of constructors and destructors with the help of a relevant code?	**10**	**CO4**
Q7	Explain diamond problem in multiple inheritance? Provide a relevant solution to the diamond problem?	**10**	**CO2,CO3,Co4**
Q8	Explain aggregation and composition in inheritance?	**10**	
Q9	Define briefly fstream? Show with the help of an example the use of fstream for opening, updating and closing a file? Or How is random file access managed in C++. Give a relevant example of the same supported by a code.	**10**	**CO4,Co3**

SECTION-C

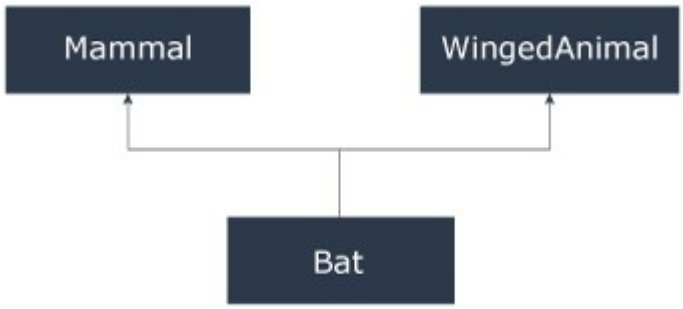
Q 10	Q4.a. Explain the working of following code:
	
	`#include <iostream>`
	`#include <exception>`
	`using namespace std;`
	
	`struct MyException : public exception {`
	`  const char * what () const throw () {`
	`  return "C++ Exception";`
	`  }`
	`};`
		20 (10+10)	**CO4,CO3, CO2**

```
int main() {
  try {
    throw MyException();
  } catch(MyException& e) {
    std::cout << "MyException caught" << std::endl;
    std::cout << e.what() << std::endl;
  } catch(std::exception& e) {
    //Other errors
  }
}
```

Q4.b. Deduce, report and rectify the error in the code:

```
#include <iostream>
using namespace std;

double division(int a, int b) {
  if( b != 0 ) {
    throw "Division by zero condition!";
  }
  return (a/b);
}

int main () {
  int x = 50;
  int y = 0;
  double z = 0;

  try {
    z = division(x, y);
    cout << z << endl;
  } catch (const char* msg) {
   cerr << msg << endl;
  }

  return 0;
}
```

Q11	Define multiple inheritance? Write the code for the following inheritance:		**CO2, CO3, CO4**



Output of each call should be class name?

Or

Define base class, intermediate class and derived class with the help of a family tree? Also write the code for the inheritance?