POKHARA UNIVERSITY

Level: Bachelor | Semester: Spring | Year : 2019
Programme: BE | Full Marks: 100
Course: Object Oriented Programming C++ | Pass Marks: 45
Time : 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Software development process is not linear. Justify. Explain abstraction mechanism technique in C++ with examples. 7
   b) Differentiate between structure and class in C++? What are the various access specifiers used in class? 8
2. a) Illustrate the role of friend function in object oriented programming with its pros and cons. Also write a suitable program. 8
   b) What is dynamic memory allocation? How is memory allocated and de-allocated in C++? Explain with examples 7
3. a) Explain subtype, principal of substituablity, object pointer, this pointer,virtual function with examples. 7
   b) Write a program to input two vector coordinates from a base class named "Base". Class "Derived" inherits all the properties of class Base. Class "Derived" must contain a function named add_vector() that add the two vectors input from the base class and finally display the result from a function display() that is friend with the base class. 8
4. a) Create a class called **Person** with suitable data members to represent their name and age. Use member functions to initialize and display these information. Derive **Student** and **Employee** from the **Person** class with their unique features. Initialize objects of these classes using constructor and display the information. 7
   b) How can you achieve compile time and runtime polymorphism. Explain with examples. 8
5. a) What do you mean by type casting? Write a program to convert an object of Polar class into the object of Rectangle class by using type convesion routine. 8

   b) Write a program to add two complex numbers. Your program should have three objects. Each object contains two attributes (i.e real and imaginary part). Now add each attribute and save them into third object seperately. Use the concept of '+' operator overloading. 7
6. a) Explain the purpose of template programming with examples. Describe the technique of exception handling in C++with examples. 8
   b) Explain CRC cards and sequence diagram with examples. 7
7. Write short notes on: **(Any two)** 2×5
   a) Message Passing in C++
   b) Inline function
   c) Abstraction mechanism