



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Third Semester, B.E. - Computer Science and Engineering

Semester End Examination; Dec. - 2015

Object Oriented Programming with C++

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Define the following terms :
- | | | | | |
|------------------|---------------------|------------------|--|----|
| i) Object | ii) Class | iii) Inheritance | | 10 |
| iv) Polymorphism | v) Dynamic binding. | | | |
- b. Describe the properties of static member functions, with syntax. 4
- c. What is function overloading and illustrate with an example program. 6
- 2 a. List and explain the benefits of OOP (any eight). 8
- b. What is friend function? What are the merits and demerits of using friend functions? 6
- c. Can we pass object as function argument? Explain with an example. 6

UNIT - II

- 3 a. What is a constructor? Is it mandatory to use constructor in class? Discuss any two types of constructor. 6
- b. Distinguish between the following statements :
- time T2(T1) ;
- time T2 = T1;
- Where T1 and T2 are objects of 'time' class. 6
- c. Write a program to overload! = operator to compare two distances given in feet and inches. 8
- 4 a. Describe the importance of destructor. Explain its use with the help of an example. 5
- b. List the rules for overloading operators (Any 5). 5
- c. Write a program to add two timings (hour, min) by overloading + operator using friend function. 10

UNIT - III

- 5 a. Perform bubble sort using template function. 10
- b. What is an exception? With block diagram explain the concept of exception handling. 6
- c. What is STL? What are the three key components? Show their relationship with a diagram. 4
- 6 a. Describe the concept of overloading template function. Illustrate the same with an example. 10
- b. What are the advantages of exception handling mechanism in a program? 4
- c. What is the major difference between 'Sequence container' and 'associative container'? Discuss. 6

UNIT - IV

- 7 a. List and explain different forms of inheritance with syntax and block diagram for each. 10
- b. There is a base class called 'number' which consists of register number of students. There is another base class called 'marks' which consists of marks obtained in two subjects. There is a derived class called 'student' which inherits the above two classes. This derived class determines the total marks of two subjects and declare the result as pass if the marks exceeds 100 otherwise the result as Fail. Draw the class network diagram and then write a C++ program to achieve this, with suitable input, write the expected output of the program. 10
- 8 a. What is virtual base class? Give block diagram and syntax for the creation of the same. 6
- b. Write a note on constructor in derived class. 4
- c. Write a program using multilevel inheritance concept (3 levels). In the top level class 'A' should read student roll number and marks of two subjects. In the second level class 'B' reads marks for sports. In the third level class 'C' computes the average of three marks read in the previous two classes. It should also display roll number and average marks obtained. Also write class hierarchy diagram. 10

UNIT - V

- 9 a. When do we make a virtual function 'Pure'? What are the implications of making a function a pure virtual function? Give example to illustrate. 10
- b. Explain hierarchy of stream classes for console I/O operations with diagram. 10
- 10a. Compare and contrast early versus late binding. 4
- b. List the rules for having virtual function (any six). 6
- c. With example explain the following ios functions : 10
- i) width () ii) precision () iii) fill iv) setf () v) unsetf ()

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