

**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 - 2016/Jan - 2017****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. Differentiate between object oriented and procedure oriented programming. 5
- b. With an example, explain inline function. 5
- c. Create a class called Time with days, hours, min and sec as its data memers. Write appropriate member function for this class. Using this write a program to add 2 Time objects. 10
- 2 a. Explain the following :
- i) Class ii) Object iii) Inheritance 5
- iv) Encapsulation v) Message passing.
- b. Write a program to add two float data, two integer data and two character data using function overloading concept. 9
- c. Differentiate between member function and friend function. Write friend function to add two comple objects. 6

UNIT - II

- 3 a. Define constructor. Explain any two types of constructor. 6
- b. Differentiate between the following statements, where sample is the name of the class. Also give an example to each. 4
- i) sample s2(s1) ii) sample S1, S2; S2 = S1;
- c. Write a program to add all the elements of a matrix, create memory for matrix object using dynamic constructor. 10
- 4 a. What is the need of operator overloading? List any six rules to overload operators. 8
- b. Create a class called operand with data members of type integer. Write a program to evaluate the following expression $D = A + B * C$ where A, B, C and D are objects of type operand, overload +, *, <<, >>. 12

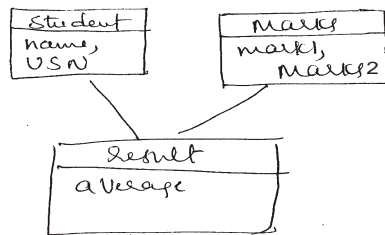
UNIT - III

- 5 a. What is generic programming? How it is implemented in C++? 4
- b. Write a class template to represent generic vector. Include member functions to,
- i) Create vector ii) Multiply a vector by integer constant using above function 12
- Write a program to create and multiply by constant for any type of data.
- c. Illustrate with example, function templates with multiply parameters. 4

- 6 a. Explain the limitations of exception handling with example. Explain with example, how the exceptions are handled in C++? 8
- b. With programming example, explain how multiple catch statement are handled? 6
- c. Explain briefly the components of STL. 6

UNIT - IV

- 7 a. Explain different types of inheritance with an example. 10
- b. For the given class diagram, write a program to display the following information of a student Name, USN, mark 1, mark2, average and result as per following condition, if average ≥ 50 Pass else Fail



10

Write appropriate member functions in each class.

- 8 a. Differentiate between function overloading and function overriding with an example to each. 4
- b. Illustrate with programming example, the usage of virtual base class. 6
- c. Consider the class diagram given below. Print all the details of n employees in an organization. (Gross pay = Basic pay+DA+HRA, Net Pay = gross pay - (PF+LIC+ IT).

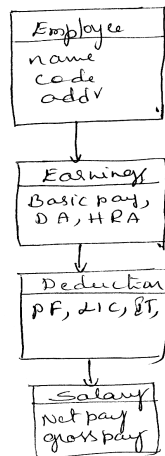


fig 8(c)

10

UNIT - V

- 9 a. How polymorphism is achieved at, i) compile time ii) run time? Explain. 6
- b. List the rules of virtual functions. 6
- c. Illustrate with an example, implementation of virtual function. 8
- 10 a. Explain stream classes for console operation. 10
- b. Explain the following formatted console I/O operation with an example to each, 10
 - i) precision() ii) setf() iii) fill() iv) width() v) unsetf().