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## 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++

**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 5 With an example, explain inline function. Create a class called Time with days, hours, min and sec as its data memers. Write appropriate 10 member function for this class. Using this write a program to add 2 Time objects. 2 a. Explain the following: i) Class ii) Object iii) Inheritance 5 iv) Encapsulation v) Message passing. Write a program to add two float data, two integer data and two character data using function 9 overloading concept. Differentiate between member function and friend function. Write friend function to add two 6 comple objects. **UNIT - II** 3 a. Define constructor. Explain any two types of constructor. 6 Differentiate between the following statements, where sample is the name of the class. Also 4 give an example to each. i) sample s2(s1) ii) sample S1, S2; S2 = S1; Write a program to add all the elements of a matrix, create memory for matrix object using 10 dynamic constructor. 4 a. What is the need of operator overloading? List any six rules to overload operators. 8 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, 12 overload +, \*, <<, >>. **UNIT - III** What is generic programming? How it is implemented in C++? 4 5 a. 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.

Illustrate with example, function templates with multiply parameters.

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6 a. Explain the limitations of exception handling with example. Explain with example, how the exceptions are handled in C++?

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- b. With programming example, explain how multiple catch statement are handled?
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c. Explain briefly the components of STL.

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## **UNIT-IV**

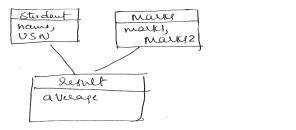
7 a. Explain different types of inheritance with an example.

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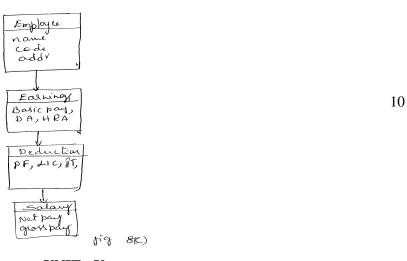
b. For the given class diagram, write a program to display the following information of a student Name, USN, mark 1, mark2, average and result as per following condition,

if average >= 50 Pass else Fail



Write appropriate member functions in each class.

- 8 a. Differentiate between function overloading and function overriding with an example to each.
  - b. Illustrate with programming example, the usage of virtual base class.
  - 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).



**UNIT - V** 

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