



## 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 |

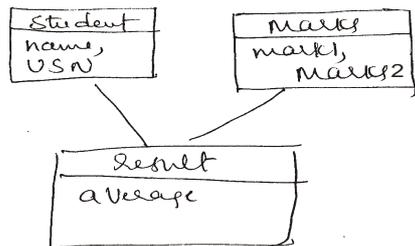
### UNIT - III

- |      |  |    |
|------|--|----|
| 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**

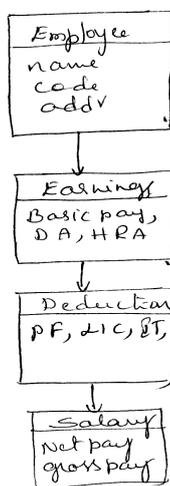
- 7 a. Explain different types of inheritance with an example. 10
- b. For the given class diagram, write a program to display the following information of a student Name, USN, mark 1, mark2, average and result as per following condition, if average >= 50 Pass else Fail



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)).



10

fig 8(c)

**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( ).