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

(An Autonomous Institution affiliated to VTU, Belgaum)

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

Semester End Examination; Dec - 2016/Jan - 2017

OOP'S with JAVA

Time: 3 hrs

Max. Marks: 100

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

### UNIT - I

- 1 a. Explain the steps involved, when  $x = y$  is executed during runtime. 5
- b. Write a program to describe the working of return by reference in functions. 5
- c. Define inline functions. List the steps involved in specifying inline functions. State the advantage and disadvantage of using inline function. 5
- d. Explain static member functions with an example. Can a static member function take 'this' pointer as a formal argument? 5
- 2 a. Give the syntax of a function. Explain function overloading with an example. 7
- b. Discuss mutable data member with an example. 4
- c. Explain the following with examples : 9
  - i) Namespaces
  - ii) Arrow operator
  - iii) Friend member functions.

### UNIT - II

- 3 a. Under what conditions does static memory allocation become unsuitable? What is dynamic memory allocation? How is it different from static memory allocation? 5
- b. Describe with a program use of different types of constructors. 10
- c. Write a program to discuss functions overriding. 5
- 4 a. Explain the syntax of *delete* operator for;
  - i) De-allocating memory that has been allocated for a single variable 5
  - ii) De-allocating memory that has been allocated for an array  
With a program.
- b. Why should the formal argument of a copy constructor be a reference object? Write a program to demonstrate the use of copy constructor. 8
- c. What is inheritance? List different types of inheritance. Write a program to explain a simple inheritance. 7

### UNIT - III

- 5 a. Explain the need of virtual function with an example. 5
- b. Define pure virtual function. Write a program to describe the use of pure virtual function. 5
- c. Describe any five rules to be followed while overloading operators with example. 10

- 6 a. Illustrate with a program virtual destructors and virtual constructors. 10
- b. Write a program in C++ to overload increment, decrement operator in both the prefix as well as the postfix notation. 10

#### UNIT - IV

- 7 a. Define streams in C++. Show with a block diagram, library classes that handle streams in C++. 5
- b. Write a program to insert characters into output streams using the insertion operator. 5
- c. Write the syntax for creating a template for a generic function. Also write a program to demonstrate the use of template for the function "Swap". 5
- d. Define exception. List the three component of exception handling. 5
- 8 a. Write a program in C++ to extract characters from input streams using the extraction operator. 5
- b. What are class templates? What is the need for class templates? How are they created? Explain with a suitable program. 10
- c. Describe with a program to handle arithmetic exception with *try* and *catch* block. 5

#### UNIT - V

- 9 a. What is byte code in Java? List and explain the features of Java. 10
- b. List different types of Bitwise and Boolean logical operators. 6
- c. Explain the use of *for* loop with an example. 4
- 10 a. Write a program to describe the different uses of *super* keyword in Java. 5
- b. Write a program in Java to accept 10 integer numbers from command line and sort them using bubble sort. 8
- c. Compare method overriding and method overloading in Java. 7

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