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

(An Autonomous Institution affiliated to VTU, Belagavi)

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

Semester End Examination; Dec. - 2019

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. Explain the following terms:
- | | | | |
|----------------------|--------------------|--------------------|--|
| i) Polymorphism | ii) Inheritance | iii) Encapsulation | |
| iv) Data Abstraction | v) Dynamic Binding | | |
- b. What is function overloading? Write a C++ program to define three overloaded functions to find the sum of two integers, sum of two floating point numbers and sum of three integers. 10
- 2 a. What are Inline functions? Illustrate Inline functions with an example. 8
- b. Define class and objects. Write a C++ program to create a class called STUDENT with the following data members:
- Name, Roll_no and Avg_Marks 12
- Member functions: read and write.
- Use the above specification to read and print the information of five STUDENTS.

UNIT - II

- 3 a. What are constructors? Explain the different types of constructors. Write a C++ program that illustrates the invocation of all the types of constructors. 12
- b. What are Destructors? Explain dynamic initialization of objects. 8
- 4 a. Write a C++ program to perform the addition of two LOCATION objects by overloading + operator using a class "LOCATION" with the data members longitude and latitude. Read and Display the LOCATION objects by overloading << and >>. 12
- b. Write C++ program to overload the unary operator ++ in both pre and post increment forms. 8

UNIT - III

- 5 a. What are function Templates? Write a C++ program that performs sorting of an array of integers and floating point numbers using a template function based program. 10
- b. What is STL? Briefly explain the use of containers, vectors, lists and maps in STL. 10
- 6 a. What is Exception handling? Write a C++ program that illustrates exception handling with the help of three keywords: Try catch and throw. 10
- b. Write a C++ program to illustrate class templates with multiple parameters. 10

UNIT - IV

- 7 a. Write a C++ program to illustrate multiple and multi-level Inheritance. 12
b. Explain passing of parameters to base class constructors. 8
- 8 a. Explain the different types of Inheritance. 10
b. With C++ program, explain the need for Virtual Base Classes. 10

UNIT - V

- 9 a. What are Virtual functions? Write a C++ program to demonstrate calling of Virtual function through a base class reference. 10
b. What are streams in C++? Explain C++'s predefined streams. 10
- 10a. Write a note on;
i) Pure Virtual Function and Abstract classes 10
ii) width(), precision () and fill() functions
- b. What are I/O manipulators? Explain C++ manipulators used for output. 10

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