U.S.N | | | | | | | | | | |

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

(An Autonomous Institution affiliated to VTU, Belagavi)

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

Semester End Examination; Dec. - 2019

Object Oriented Programming with Java

Time: 3 hrs *Max. Marks: 100*

Note: i) PART - A is compulsory. **Two** marks for each question.
ii) PART - B: Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks
	I : PART - A	**10**
I a.	Why C++ introduced reference variable? Give an example.	2
b.	How does inheritance influence the size and functionality of derived class objects?	2
c.	List any two differences between virtual destructors and virtual constructors.	2
d.	Distinguish between text and binary files.	2
e.	State the purpose of "final" keyword used in Java.	2
	II : PART - B	**90**
	UNIT - I	**18**
1 a.	Define function prototyping and write its general syntax. Why should default values are to be given to function argument in the function prototype? Explain with an example.	9
b.	Define 'this' pointer. With an example, indicate the steps involved in referring to members of the invoking object.	9
c.	Demonstrate the following with a C++ program; i) Passing objects to functions ii) Returning objects from functions	9
	UNIT - II	**18**
2 a.	Illustrate how 'new' and 'delete' operators manage the memory allocation / de-allocation dynamically with a C++ program?	9
b.	What is the benefit of copy constructor? Explain the necessity of defining your own copy constructor with a C++ program.	9
c.	Write a C++ program to create a class called STUDENT with data members USN, Name and Age. Using inheritance, create the class called UGSTUDENT having fields a semester, fees and stipend. Enter the data for at least 5 students. Find the average age of all UG students.	9
	UNIT - III	**18**
3 a.	Define dynamic polymorphism and discuss how dynamic polymorphism is achieved using virtual functions with an example?	9

Contd…2

b. What is operator overloading? List the circumstances in which operator overloading becomes mandatory. How does the compiler interpret the operator overloading? 9

c. Write a C++ program to create a class called STACK using an array of integers. Implement the following operations by overloading the operators '+' and '--':

i) s1 = s1+element; where s1 is an object of the class STACK and element is an integer to be pushed on the top of the stack. 9

ii) s1 = s1--; where s1 is an object of the class STACK, '--' operator pops the element.

Handle the STACK empty and full conditions. Also display the contents of the stack after each operation, by overloading the << operator.

UNIT - IV **18**

4 a. With a neat diagram, explain the library classes that handle streams. 9

b. What are class templates? What is the need for class templates? How are they created? Create a template for bubble sort function. 9

c. Write a C++ program to demonstrate the "try", "throw" and "catch" keywords for implementing exception handling. 9

UNIT - V **18**

5 a. List out the features of Java and explain any three features. 9

b. List and explain the different types of iteration statements in Java. 9

c. Write a Java program to perform the subtraction of two complex numbers by using the method sub( ) by passing object as a parameter and display the result using method display( ). Initialize the real and imaginary values of the complex number using parameterized constructor. 9

* * *