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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; March / April - 2022
Object Oriented Programming with Java

Time: 3 hrs   Max. Marks: 100

Course Outcome

The Students will be able to:
CO1: Explain the object-oriented concepts and apply Java features to develop simple Java programs.
CO2: Understand the concepts of classes, objects and methods.
CO3: Demonstrate the usage of Inheritance and Interfaces.
CO4: Implement the concepts involving Packages, String handling and Exception Handling
CO5: Apply the concepts of multi-threading, generics and files in java

*<u>Note:</u> I) PART - A is compulsory. **Two** marks for each question.*
   *II) PART - B: Answer any <u>Two</u> sub questions (from a, b, c) for Maximum of **18 marks** from each unit.*

Q. No.	Questions	Marks	BLs	COs	POs
	I : PART - A	**10**			
I a.	What are the four pillars of object oriented programming?	2	L1	CO1	PO1
b.	What is constructor in Java?	2	L1	CO2	PO1
c.	Differentiate between Base class and Derived class.	2	L1	CO3	PO1
d.	List the two types of packages supported in Java.	2	L1	CO4	PO1
e.	What is multithreading in Java?	2	L1	CO5	PO1
	II : PART - B	**90**			
	UNIT - I	**18**			
1 a.	Explain the benefits and applications of object oriented programming	9	L2	CO1	PO2
b.	List and explain any four classes of operators supported in java.	9	L2	CO1	PO2
c.	List any four methods of class Array and explain the same with suitable syntax and examples.	9	L2	CO1	PO2
	UNIT - II	**18**			
2 a.	What is Nested class? Explain the "Member inner class" and "Anonymous class" with suitable example.	9	L2	CO2	PO2
b.	Create a java class called "student" with the following attributes such as "roll no", "name", "marks" and write a java program to create 'N' student objects and print the roll no, name, marks of three objects with suitable headings.	9	L3	CO2	PO2
c.	Illustrate the use of method overloading with program.	9	L3	CO2	PO2

UNIT - III **18**

3 a. Design a super class called "vehicle" with following attributes such as "engine", "wheels", "seats" and "lights". Extend this class by writing two sub classes namely "car" with two additional attributes "steering", "Air conditioning" and subclass "bike" with one additional attributes "handle". Write a java program to read and display at least one vehicle objects of all two categories. | 9 | L3 | CO3 | PO2

b. Explain the uses of super keyword and final keyword. | 9 | L2 | CO3 | PO2

c. What is Interface? Explain the role of interface in achieving abstraction and multiple inheritance in Java. | 9 | L2 | CO3 | PO2

UNIT - IV **18**

4 a. List and explain any nine built-in packages supported in Java. | 9 | L2 | CO4 | PO2

b. List and explain any five string manipulation functions supported in Java string class. | 9 | L2 | CO4 | PO2

c. Write a java program to create custom exception to check valid marks (0-100). | 9 | L2 | CO4 | PO2

UNIT - V **18**

5 a. Develop a java program that implements a Multi-thread application that has three threads. First thread generates a random integer for every one second, second thread computes the square of number and prints, third thread will compute the cube of number and prints. | 9 | L3 | CO5 | PO2

b. Explain the lifecycle and states of a thread in Java with suitable diagram. | 9 | L2 | CO5 | PO2

c. Explain generic programming with any three benefits of using generics in Java. | 9 | L2 | CO5 | PO2

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