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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 - 2021

Object Oriented Programming with Java

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

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.

***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	BLs	COs	POs
		I : PART - A	**10**			
I	a.	List any two methods with syntax of Array class.	2	L1	CO1	
	b.	Define class and object.	2	L1	CO2	
	c.	List the different types of Inheritance.	2	L1	CO3	
	d.	List two ways of setting path environment variable.	2	L1	CO4	
	e.	What is Thread? List two ways of creation of thread.	2	L1	CO5	
		II : PART - B	**90**			
		UNIT - I	**18**			
1	a.	Discuss the benefits of object oriented programming.	9	L2	CO1	
	b.	Explain different types of data types, operators and control statements with an example.	9	L3	CO1	
	c.	Write a Java program to print factorial of the number "*n*" using "*for*" loop.	9	L3	CO1	
		UNIT - II	**18**			
2	a.	i) Discuss the different levels of access protection available in Java.	6	L2	CO2	
		ii) Discuss usage of "*this*" keyword with an example.	3	L2	CO2	
	b.	Create a Java class called "Student" with the following details as variables within it USN, Name, Branch, Phone number and write a Java Program to create 'N' student objects and print the USN, Name, Branch, and phone number of these objects with suitable headings.	9	L2	CO2	
	c.	i) Write a Java program to print the area and perimeter of two rectangles having sides (4, 5) and (5, 8) respectively by creating a class named "Rectangle" with a method named "Area" which returns the area and length and breadth passed as parameter to its constructor.	6	L3	CO2	
		ii) Write a short note on method overloading.	3	L3	CO2	

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	UNIT - III	**18**		
3 a.	Design a super class called "staff" with details as staff ID, Name, Phone, Salary. Extend this class by writing two subclasses namely Teaching (domain, publications) and Technical (skills). Write a Java program to read and display at least two staff objects of all two categories.	9	L3	CO3
b.	i) List differences between abstract class and interface.	4	L2	CO3
	ii) Explain differences types of inheritance.	5	L2	CO3
c.	i) Briefly explain the role of interfaces while implementing multiple inheritances in Java.	6	L2	CO3
	ii) Write a short note on "Super" Keyword.	3	L2	CO3
	UNIT - IV	**18**		
4 a.	i) Define the role of exception handling in software development.	3	L2	CO4
	ii) Write a Java program for illustrating the exception handling when a number is divided by zero and an array has a negative index value.	6	L3	CO4
b.	With an example, illustrate how user defined packages are created and imported.	9	L2	CO4
c.	With an example, illustrate different types of string constructors in Java.	9	L2	CO4
	UNIT - V	**18**		
5 a.	Define the concept of multithreading in Java and explain creation of new thread by extending Thread class.	9	L2	CO5
b.	i) Define Generic programming. List any two benefits of using generics.	3	L2	CO5
	ii) Write a generic method display with a single parameter to display string array, integer array and float array. Write the driver program to invoke this method from the main function.	6	L3	CO5
c.	i) Explain different constructors of class file.	3	L2	CO5
	ii) Write a Java program, to illustrate the usage of any three methods of class file.	6	L2	CO5

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