

**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; March - 2021****Object Oriented Programming with Java**

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Understand object-oriented concepts and Java features.

CO2: Apply Java features to develop programs.

CO3: Demonstrate the usage of Inheritance and Interfaces.

CO4: Develop programs using Packages Exception Handling.

CO5: Develop programs using generic concepts 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.	Determine the value of m and n after execution of the following code: if $k = 62 = 0011\ 1110$ and $l = 23 = 0001\ 0111$ i) $m = k$ and l ii) $n = k^l$	2	L1	CO1	PO1
b.	Mention the reason for using keyword <i>public</i> and <i>static</i> while defining <code>main()</code> method.	2	L1	CO2	PO1
c.	Explain for what purpose <i>final</i> keyword can be used with respect to class and method.	2	L2	CO3	PO1
d.	List any four commonly used classes of <code>java.lang</code> package.	2	L1	CO4	PO1
e.	Mention any two uses of wildcard type.	2	L1	CO5	PO1
II : PART - B		90			
UNIT - I		18			
1 a.	i) Distinguish between Object Oriented Programming and Procedure Oriented Programming	5			
	ii) Write Java program to determine the area of rectangle given the dimensions of rectangle.	4	L1	CO1	PO1,2
b.	i) Write Java program that sums up integer numbers from a to b (including a and b). The values of a and b are entered by user.	5			
	ii) Explain with example, how statement <i>break</i> with label differs from <i>break</i> without label	4	L2,3	CO1	PO1,2
c.	Write Java program to find;				
	i) Roots of quadratic equation using if – else construct given the values of a , b and c	5	L2,3	CO1	PO1,2
	ii) Illustrate with example working of <i>switch</i> construct	4			

UNIT - II**18**

- 2 a. i) Define a class by name holiday with three instance variables name (string), day (integer), month (string) and constructor which accepts three parameters to set values for all instance variables. Also write main () to create an instance of class holiday with name value Independence day, day with 15 and month to August. 5 L2,3 CO2 PO1,2
- ii) Describe access modifiers with respect to class declaration. 4
- b. i) Write Java program to illustrate method overloading. 5
- ii) Explain with example program, significance of *final* keyword when used for declaring instance variables. 4 L2,3 CO2 PO1,2
- c. i) Write Java program to illustrate the use of keyword *this*. 5 L2,3 CO2 PO1,2
- ii) Differentiate between method and constructor. 4

UNIT - III**18**

- 3 a. Explain Single level, Multilevel and Hierarchical types of inheritance supported by Java. 9 L2,1 CO3 PO1,2
- b. Define method overriding. Write Java program to illustrate method overriding. 9 L3,2 CO3 PO1
- c. i) Declare an interface with a method to calculate the volume with one double parameter. Implement the same for finding the volume of a sphere and cube by two different classes ($sphere - \frac{4}{3}\pi r^3$, $cube - r^3$). 9 L2,6 CO3 PO1,2
- ii) Differentiate between class and interface.

UNIT - IV**18**

- 4 a. Write Java program to illustrate the use of user defined exception. 9 L2,6 CO4 PO1,2
- b. Write Java program to create try block that generates three different types of runtime exceptions. Include necessary catch block to handle the exceptions. 9 L2,3 CO4 PO1,2
- c. i) Describe the steps in creating packages. 5 L3,6 CO4 PO1,2
- ii) Define a package consisting of a class with at least one method. Write Java program that creates an object of class defined in package and also to call the method defined in the package. 4 L3,6 CO4 PO1,2

UNIT - V**18**

- 5 a. Write Java program to illustrate the case of generic super class with one type parameter and generic subclass with two type parameter. 9 L6,2 CO5 PO1,2
- b. List the restrictions on used card type. Write Java program to illustrate unbounded wild card. 9 L6 CO5 PO1,2
- c. i) Write Java program to create a file and the write "I am fine" into the file. 4 L2,6 CO5 PO1,2
- ii) Describe any five methods of class file. 5