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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February 2025 Semester End Main Examinations

Programme: B.E. **Semester: IV**

Branch: Information Science and Engineering **Duration: 3 hrs.**

Course Code: 23IS4PCJAV **Max Marks: 100**

Course: Java Programming

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT – I	*CO*	*PO*	Marks
1	a)	Design a class named Library with member variables B_Id, B_Title, B_Author and B_Publisher. Member function Read() to read the member variables by taking input from user and Display() method to display the member variables. Create a driver class with the main method that creates twenty objects of class Library and invoke the defined methods.	*CO2*	*PO1*	**07**
	b)	Write a program to demonstrate passing objects as parameters to a function and the function should return an object.	*CO2*	*PO1*	**05**
	c)	Create a class Pet with member variables PetId, PetName and PetBreed. Initialize the member variables with three different types of constructors and create objects of Pet class to invoke all the constructors.	*CO2*	*PO1*	**08**
		OR			
2	a)	Explain the features of Java			**05**
	b)	Write a program to create a class rectangle with member variables length, breadth and member functions read, display to read and display the member variables. Write member function to calculate_area() to compute area of the rectangle. Write a driver class to create 15 objects and compute area of all these objects.	*CO1*	*PO1*	**05**

	c)	Predict the output with reasons and rectify
		class Student{
		int rollno;
		String name;
		float fee;
		Student(**int** rollno,String name,**float** fee){
		rollno=rollno;
		name=name;
		fee=fee;
		}
		void display(){System.out.println(rollno+" "+name+" "+fee);}
		}
		class TestThis1{
			CO2	*PO2*	**05**

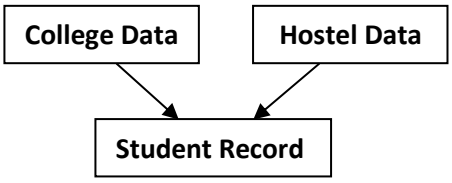
			public static void main(String args[]){
			Student s1=**new** Student(111,"ankit",5000f);
			Student s2=**new** Student(112,"sumit",6000f);
			s1.display();
			s2.display();
			}
			}			

		d)	Find out the error of the following
			class A{
			int a=40;//non static
			public void display()
			{
			System.out.println(“in method display”);
			}
			public static void main(String args[]){
			System.out.println(a);
			}
				CO2	***PO2***	**05**

			UNIT – II			
	3	a)	Write code snippets to analyze the different usages of super keyword in java with explanation.	***CO3***	***PO2***	**08**

		b)	Identify the errors in the code, correct the errors with justification.
			interface Sayable{
			void say(){
			System.out.println("Hello, this is default method");
			}
			void sayMore(String msg);
			}
			public class DefaultMethods implements Sayable{
			
			}
			public static void main(String[] args) {
			Interface Sayable dm = new Sayable();
			dm.say();
			dm.sayMore("Work is worship");
			}
			}
				CO3	***PO2***	**05**

		c)	Create a package named Firstpack, containing a class AreaTriangle in which a method Area() finds area of a triangle and returns area. Create another package Secondpack with class Triangle that invokes the Area() method of Firstpack and displays the area of triangle. Member variables can be considered as per the program requirement.	***CO2***	***PO1***	**07**
			OR			
	4	a)	Create a class Shape with member function Area(). The Rectangle class, Square class and Circle class inherits the Shape class and implements the method Area(). Demonstrate the usage of Runtime polymorphism in the given program by using appropriate member variables and additional methods.	***CO2***	***PO1***	**08**

		b)	Given the diagram below, write a program to implement the same by choosing appropriate member variables and methods.  	*CO3*	*PO2*	**07**
		c)	Explain the different types of access specifiers and their use in packages.	*CO1*		**05**
			UNIT - III			
	5	a)	Create a class with member variables feet, inches and member function read() to read the data from keyboard and display() to display the entered values. The program should raise an exception if the inch entered by the user is equal to or greater than 12.	*CO2*	*PO1*	**08**
		b)	Write a program to set priority for two threads and display the thread details.	*CO2*	*PO1*	**04**
		c)	Differentiate between checked and unchecked exceptions with example on how to handle both the exceptions using codes snippets.	*CO2*	*PO1*	**08**
			OR			
	6	a)	Write a program to create two threads where Thread1 generates 100 natural numbers and Thread2 finds the sum of 50 natural numbers using runnable interface. Also differentiate between creating threads using thread class and Runnable interface.	*CO2*	*PO1*	**10**
		b)	Consider a Banking system that allows online transactions to its customers. Develop a program to avoid any race condition that can occur during the transactions. Discuss the different ways Java handles race conditions.	*CO2*	*PO1*	**10**
			UNIT - IV			
	7	a)	Write a program to store student information in a file, read the content from the stored file and display the same using FileInputStream and FileOutputStream.	*CO2*	*PO1*	**08**
		b)	Write a program to read the console input using character-oriented stream.	*CO2*	*PO1*	**04**
		c)	With code snippets explain the following string operations: i) trim() ii) join() iii) toCharArray() iv) equals( ) and ==	*CO2*	*PO1*	**08**
			OR			
	8	a)	i)String str=”hello” String s= new String(“hello”); **Differentiate with the above two statements.** ii)**String s=new String(“hello”);** how many memory locations are allocated when this statement is executed.	*CO3*	*PO2*	**05**

		b)	Complete the given code to get **output : 20,100**
			Class example{
			Int x,int y
			Void Example()
			{
				CO3	*PO2*	**05**

			}
			Void Example(int p,int q)
			{
			x=p;
			y=q;
			}
			…..
			}
			Class demo{
			Public static void main(String args[])
			{
			Example e1=new Example(20,100);
			System.out.println(e1);
			}			

		c)	Develop a program to perform the following tasks i) Assign a different char at pos 3 in a string "Bagalkot" ii) Convert the string "***A reader lives a thousand lives before he dies. The man who never reads lives only once.***"" to array of characters iii) Given the strings String s1= "My college" String s2=" My college" String s3="BMS college " Write appropriate code to compare s1 with s2 and s1 with s3 for **equal** strings and also using **compareTo** function compare the **given region** of string s1 with string s2, demonstrate the difference between **equals** and ==. iv) To search good in a string s1="good Student" and s2="Student is sstudying". v) Extract a substring **good** in the string s2="good morning"	***CO2***	***PO1***	**10**
			UNIT - V			
	9	a)	Create a class Large with member variables an array and size of the array, member function to find the largest element of the array. Create a driver class which passes both integer and float array to the class Large.	***CO2***	***PO1***	**08**
		b)	Analyze the need for type wrapper classes. Differentiate between Autoboxing and Autounboxing.	***CO3***	***PO2***	**06**
		c)	Create a class Employee with member variables id, name, designation and location. Create a list of employees using the LinkedList class, add three objects of Employee class and display the data.	***CO2***	***PO1***	**06**
			OR			
	10	a)	Discuss java collection frameworks			**05**
		b)	Develop a Program to demonstrate add, add first, addlast, clear and display the elements in ArrayDeque	***CO1***	***PO1***	**05**
		c)	Develop a program to create a generic class that has array of elements as member variables. Also methods to input, display and also compute the sum of odd elements and even elements .	***CO1***	***PO1***	**10**

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