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**SHRI BHAGUBHAI MAFATLAL  
POLYTECHNIC AND COLLEGE OF  
ENGINEERING**

**Program** : Computer Engineering (CSE)  
**Course** : Java Programming

**Semester** : III-A  
**Course Code** : PRJ238913

## **JAVA QUESTION BANK PT-1**

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### **CHAPTER NO 1: INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING {6 marks} (CO1)**

1. Describe primitive and non- primitive data types of java with appropriate code snippets. **(4)**
2. Define bytecode with brief description and list its advantages **OR** describe “platform independent” feature in java. **OR** describe “portability” feature in java. **(4/6)**
3. Describe the following features in java /design goals of Java / Java characteristics: **(4/6)**
  - Robust
  - Secure
  - Portable
  - Multithreaded
  - Architecture-neutral
  - Dynamic
  - Distributed
  - Interpreted & high performance
  - Simple
  - Object oriented
  - Encapsulation
  - Abstraction
  - Polymorphism
  - Inheritance
4. Define type casting and explain two types of type casting with suitable example. **(4)**
5. Describe character/Boolean/floating point numbers/integer with example. **(4)**
6. Explain how to take user input using scanner class. **(4)**
7. Explain arithmetic/logical/relational operator with example **OR** with example program**(4)**
8. Explain bitwise operator with example. **(4)**
9. Explain conditional operator with example. **(4)**
10. Explain special operator with example. **(4)**

11. State the significance of Java Virtual Machine (JVM) in the Java programming environment. (4)
12. Explain the concept of platform independence in Java and discuss how it is achieved. Give example to illustrate the concept. (4)
13. Differentiate between method overloading and method overriding. (4)
14. Explain the concept of argument passing and the usage of 'this' keyword in Java give example to illustrate their usage and benefits. (4/6)

**CHAPTER NO 2:**  
**CLASSES, OBJECTS AND METHODS {12 marks} (CO2)**

1. Define the following terms with example. (4)
  - Class
  - Object
  - Reference
2. Describe the working of new operator in java with appropriate example. (4)
3. Describe the process of creation of objects in java with suitable example. (4)
4. Define constructors and explain default and parameterized constructor with example. (4/6)
5. Explain constructor overloading with example. (4)
6. Explain passing and returning objects to and from the method (function) with example. (4)
7. Explain static data and static member method with example program. (6)
8. Describe call-by-value with suitable example program. (4)
9. Describe the working of “this” keyword with an example. (4)
10. Explain constructor chaining with example program(4)
11. Explain Static blocks with example. (4)
12. Difference between class and object. (4)
13. Difference between continue and break. (4)
14. Explain Method Overloading with sample program. (4)
15. Explain String class and its methods. (4/6/8)
16. Explain the following methods in the String class with example.
  - length()
  - charAt()
  - substring(int startIndex) or substring(int startIndex, int endIndex)
  - toLowerCase or toUpperCase
  - equals(String anotherString)
  - equalsIgnoreCase(String anotherString)
  - trim()
  - replace(char oldchar, char newchar)
  - contains(charSequence sequence)
  - indexOf(String str)
  - split(String regex)
  - startWith(String prefix)
  - endsWith(String suffix)

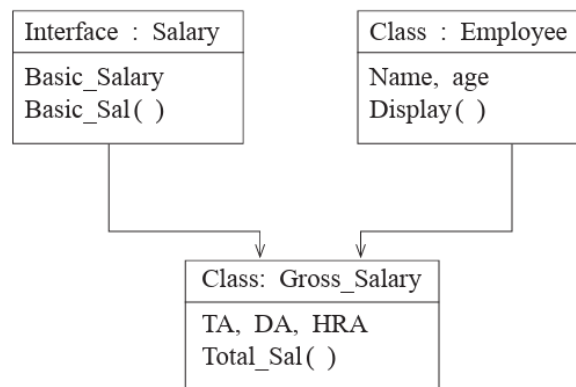
**CHAPTER NO 3:**  
**INHERITANCE,INTERFACES AND PACKAGES {20 marks}**  
**(CO3)**

1. Define Inheritance. Enlist different types of inheritance and explain all with example program(4/6)
2. Explain final Keyword with example. (4)
3. Explain use of Super Keyword with example(4)
- 4.Explain Method Overriding/ Dynamic method dispatch with example program. (4/6)
- 5.Define Interface. Describe implementation of interface with appropriate example. (4)
- 6.Explain access specifier OR Explain any four visibility controls in Java. with example and compare. (4)
7. Explain how to create a package and import it with suitable example. (4)
8. Explain the concept of packages in Java and their significance in software development. Write an example to illustrate the usage and benefits of using packages. (4/6/8)
9. Differentiate between class and interfaces. (4)
10. How to create user defined package in Java. Explain with an suitable example. (4)
11. List out different ways to access package from another package. (4)
12. Enlist and explain any four inbuilt packages in Java. (4)

## **Sample Programs: (4/6/8)**

- a. Write a Java program to create a class known as Person with data members as name and age. Use getter and setter methods. Create a subclass called Employee from Person having method named as grossal(). Calculate gross salary based on given data (Basic sal = 1,00,000 , HRA =12% of Basic, TA=7%Basic ) and Create a subclass called Student from Person having method totalmarks( ) which will calculate total marks of student based on 3 subjects.
- b. Write a Java program to create a class called Shape with methods called getPerimeter() and getArea(). Create a subclass called Circle that overrides the getPerimeter() and getArea() methods to calculate the area and perimeter of a circle.
- c. Write a Java program to create a class called Employee with methods called work() and getSalary(). Create a subclass called HR Manager that overrides the work() method and adds a new method called addEmployee().
- d. Design and implement a class named Student that demonstrates the concept of constructor overloading in object-oriented programming. The class should store basic student information and provide multiple constructors to initialize objects in different ways.
- e. Design and implement a class named Employee to store and manage employee details. Use an array of objects to handle multiple employee records. This problem focuses on object-oriented programming concepts such as class creation, object instantiation, and managing multiple objects using arrays.
- f. Write a Java program to create a class called "Bank" with a collection of accounts and methods to add and remove accounts, and to deposit and withdraw money. Also define a class called "Account" to maintain account details of a particular customer.
- g. Write a Java program to create a class called "Circle" with a radius attribute. You can access and modify this attribute. Calculate the area and circumference of the circle.
- h. Write a Java program to create a class called Shape with a method called getArea(). Create a subclass called Rectangle that overrides the getArea() method to calculate the area of a rectangle.

- i. Write a program to accept four numbers from user using command line arguments and print the smallest number.
- j. Define a class employee having data members as emp\_id, name and salary. Accept and display the data for five employees.
- k. Write a program to demonstrate the use of conditional operator and switch case statement.
- l. Write a program to define class Employee with members as id and salary. Accept data for five employees and display details of employees getting highest salary.
- m. Develop and Interest Interface which contains Simple Interest and Compound Interest methods and static final field of rate 25%. Write a class to implement those methods.
- n. Define a class circle having data members Pi and radius. Initialize and display values of data members also calculate area of circle and display it.
- o. Implement the following Inheritance.



## NOTE:

- REFER EXPERIMENTS PROGRAM ALSO FROM (EXP 2 TO EXP 9) FOR PT-1.
- PROGRAMS CAN BE CHANGED IT WON'T BE AS IT IS FOR THE EXAM.
- THE ABOVE PROGRAM ARE FOR REFERENCE ONLY.