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5. (a) Suppose there is a MyBank class having method `getInterestRate()` that returns the interest rate of the bank. Create various child classes of MyBank class like SbiBank, HdfcBank and PnbBank. Override method `getInterestRate()` in every child class that returns corresponding bank's interest value that they are offering. Also display this value.

10 Marks (CO2)

OR

- (b) Discuss different ways of abstraction in Java. Also discuss final class, final method and final variable with the help of Java programs.

10 Marks (CO2)

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**B. TECH. (CSE) (FOURTH SEMESTER)**  
**MID SEMESTER EXAMINATION,**  
**April/May, 2022**

**JAVA PROGRAMMING**

**Time : 1½ Hours**

**Maximum Marks : 50**

**Note :** (i) Answer all the questions by choosing any *one* of the sub-questions.

(ii) Each question carries 10 marks.

1. (a) Explain the concept of JVM, JDK and JRE. Also explain how Java is as platform independent language. 10 Marks (CO1)

OR

- (b) Given a list of marks ranging from 0 to 150, write a program to compute and print the number of students who have obtained marks : 10 Marks (CO1)

(i) in the range 101 to 150

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(ii) in the range 81 to 100

(iii) in the range 51 to 80

(iv) in the range 31 to 50 and

(v) in the range 0 to 30

The program should use a minimum number of if statements.

2. (a) Write a program which will read a string and rewrite it in alphabetical order. For example the word COLLEGE should be rewritten as CEEGLLO. 10 Marks (CO1)

OR

- (b) Write about the differences between String and StringBuffer classes in Java. Explain with suitable code, how append in StringBuffer class outperform simple concatenation in string. Also explain how StringBuffer is more efficient than String in terms of memory. 10 Marks (CO1)

3. (a) Write about the differences between Method Overloading and Overriding in Java. Also, explain how overloaded methods for calculating areas of various

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shapes are different in one child class from overridden methods in Inheritance.

10 Marks (CO2 and CO1)

OR

- (b) Given are two one-dimensional arrays A and B which are sorted in ascending order. Write a program to merge them into single sorted array C that contains every item from arrays A and B, in ascending order. Also, write about the applications of wrapper classes. 10 Marks (CO2 and CO1)
4. (a) Discuss inheritance in Java along with its types. Also discuss, why multiple inheritance is not supported in Java.

10 Marks (CO2)

OR

- (b) Discuss packages in Java. Write a program to create a package (P11) having class (C11). Reuse this class (C11) to some another class (C22) that is place in same package. 10 Marks (CO2)

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