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Mid-Term Examinations – October 2021

Programme	: B. Tech. – CSE	Semester	: Fall 2021-22
Course	: Programming in Java	Code	: CSE3002
Faculty	: Prof. Anand Motwani	Slot/Class No.	: B11+B12+B13 / 0268
Time	: 1½ hours	Max. Marks	: 50

Answer all the Questions

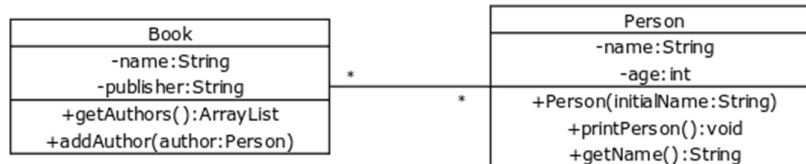| Q. No.	Question Description	Marks
1	Explain the concept of final class and method. What are the performance benefits of making a method as final? Write benefits and drawbacks of final variables.	**10**
2	Discuss the relative merits of using **protected** access v/s using **private** access in superclass. Show the order of evaluation of the operators in each of the following Java statements, and show the value of z after each statement is performed: **a)** $z = 7 + 3 * 6 / 2 - 1$; **b)** $z = 2 \% 2 + 2 * 2 - 2 / 2$; **c)** $z = (3 * 9 * (3 + (9 * 3 / (3))))$;	**10**
3	Explain the attributes, constructors and methods as well as the connections between classes. Write a code outline for the diagram shown below.	**10**

```
          Book                              Person
   -name:String                       -name:String
   -publisher:String                  -age:int
   +getAuthors():ArrayList      *  *  +Person(initialName:String)
   +addAuthor(author:Person)          +printPerson():void
                                      +getName():String
```

Q. No.	Question Description	Marks
4	Assume that the subclasses: **SBI** and **HDFC** implements a method *discount()* of super class: **Bank**. Demonstrate the concept of Runtime polymorphism where an object of **Bank** has been instantiated and initialized.	**10**
5	**a)** Demonstrate the use of static class members with the help of programming example. **b)** Show with the help of program, how we can instantiate the abstract class to keep the reference of static nested sub-class.	**10**

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