



- KEEPING MOBILE PHONE/ANY ELECTRONIC GADGETS, EVEN IN 'OFF' POSITION IS TREATED AS EXAM MALPRACTICE
- DON'T WRITE ANYTHING ON THE QUESTION PAPER

Answer ALL Questions

(10 X 10 = 100 Marks)

1. With reference to the salient features of Java, it said to be cross-platform, portable, and neutral from an architecture standpoint. Do they all have the same significance or are they all distinct? Explain your response. Also justify that it is a secured language.
2. In Operating System terminology, the term race condition is that the first thread is "in a race" to complete all the steps before it is interrupted by another thread. Consider the following statement, which is meant to avoid a division-by-zero error:

```
if ( A != 0 ) {
```

```
    B = C / A;
```

```
}
```

Suppose that this statement is executed by some thread. If the variable A is shared by one or more other threads, and if nothing is done to guard against the race condition, then it is possible that one of those other threads will change the value of A to zero between the time that the first thread checks the condition $A \neq 0$ and the time that it does the division. This means that the thread can end up dividing by zero, even though it just checked that A was not zero!. Simulate the above race condition and also show how you will fix this problem.

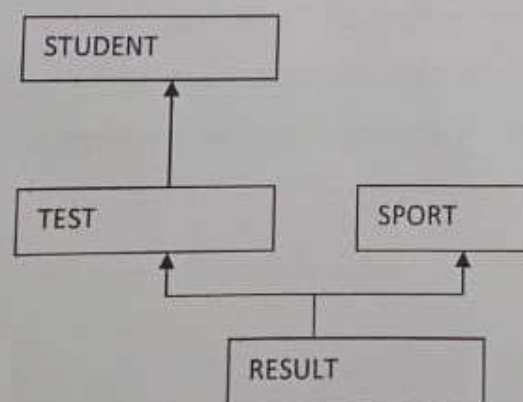
3. Develop JavaFX based temperature convertor application. Read the choice of conversion through radio button and feed in the input temperature through text field. On click of button named 'Convert' the result value should be displayed in another text field. Formula for the conversion is given below:

- $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times 5/9$
- $^{\circ}\text{F} = (9/5 \times ^{\circ}\text{C}) + 32.$

4. Demonstrate servlet application handling display of multi valued parameters submitted through check box and drop down from the browser.
5. Define Dependency Injection (DI). Elaborate on various ways of performing DI using appropriate code snippets.
6. With a neat sketch explain the components of Spring Framework.
7. Write a TCP based Java Networking console application to capture the username and password as comma separated value in the client and perform the authentication at the server end. On successful authentication server should respond with the message **"!!!Authentication Success!!!"** else **"***Authentication Failed***"**
8. Assume that development environment consists of POJO class named **'Course'** with necessary data members {course code, course name, credits and semester} and another class **'CourseDriver'**. Write appropriate code snippets to populate few course data into the ArrayList collection while initializing **CourseDriver** and define method to display the number of 3 credit courses with their complete details.
- 9.a) Create a user defined exception class named **"BookQuantityNotAvailableException"** and use it in the class **"Book"** which is described by its book id, title, author name, price and quantity available. Include a method called **purchase()** taking the purchase quantity as a parameter and update the available quantity as per the sales made. Write a java program to
 - i) Test the working of the Book class and throw the exception at the appropriate time.
 - ii) Display all the books with their details.

OR

- 9.b) Implement the below given student hierarchy:



The Student consists of the attributes for student name and roll number. The Test should contain the member for maintaining the marks obtained in five subjects. The Sport consists of the attribute to hold the weightage given for sports. The Result should print the total marks obtained by the student in his entirety. Total marks is the sum total of scores in 5 subjects and sports weightage. Use sports weightage in case the student participates in the sports activity. Throw exception in case the captured score is negative .

- 10.a) Let's say the web development framework been suggested by your team consists of POJO classes, JSP based presentation layer, Servlet and DAO layer. Develop the web application as per the framework prescribed above for sales management domain to perform search by price range.

OR

- 10.b) Assume that you have the persistent class 'Employee' with members Employee Id, Employee Name, Gender and Designation for the relation named 'Employee' maintained in HR database. Develop a driver class using hibernate API to insert an Employee record.

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