



KEEPING MOBILE PHONE/SMART WATCH, EVEN IN 'OFF' POSITION, IS EXAM MALPRACTICE

Answer ALL Questions
(10 X 10 = 100 Marks)

1.
 - a) Comment on the statement:
 - Java compiler generate byte-codes, not native machine code.
 - Java isn't a purely object-oriented language.
 - b) Write a java method called `removeFromArray()` that removes the first occurrence of an integer number (target) from an array of integers. The method will have two parameters, the original array and the number you wish to remove. If the target is found, the method should return the new array (with the number removed). If the target is not found, the method should just return the original array. For example:


```
int [] numbers = {6, 7, 3, 9, 5};
int [] newNumbers = removeFromArray (numbers, 9);
```

 would set newNumbers to {6, 7, 3, 5};
2.
 - a) Create a class called Dice to represent a single cube. It should have a method called `roll()` that randomly selects a number from 1 to 6 for the value of the dice. Create a test main method for the Dice class that creates a Dice, and rolls it many times. Each time the die is rolled, the value should be stored in an array representing the value. After a large number of rolls (say, at least 20), the number of times the die rolled 1, 2, 3, 4, 5, and 6 should be printed.
 - b) Fill the below table with four access modifiers defined in java and it's accessible/not accessible across Packages, Subclass and Anywhere as mentioned in the table.

Modifier	Package	Subclass	Anywhere
3.
 - a) Using exceptions, write a method static boolean `find (String f)` which returns true if the file name is f and false if it is not found. Write `main()` to test the above defined method.
 - b) Use an example, to explain
 - static and finally block
 - throw and throws
4. A book in a library has several characteristics such as name, author, publisher, number of pages, etc. Implement a Book class in Java to represent a book. Create an another class Author to represent the details of an author such as name and nationality. Assume that a book has only one author. Inside the main method of a Author class, create few instances of books and authors. Implement a method named `compareAuthors` in the Book class to check whether the authors of two books are the same. I.e. `boolean sameAuthor = book1.compareAuthors(book2);` should work as expected. Implement another method to check whether the nationality of the authors of two books is the same.

5. "Threading is a very powerful aspect of the Java programming language". Explain the two main ways that Java uses to incorporate threading into applications. Discuss **synchronization** - Why is it used? Write an example Java application of when you would use it. [8]
6. a) Suppose that a file named "testdata.txt" contains the following information: The first line of the file is the name of a student. Each of the next three lines contains an integer. The integers are the student's scores on three exams. Write a program that will read the information in the file and display (on standard output) a message that contains the name of the student and the student's average grade on the three exams. The average is obtained by adding up the individual exam grades and then dividing by the number of exams. [5]
b) A student information system stores a collection of student records for a University. Should it use a list or a set? Support your answer with necessary code in Java. [5]
7. List and explain any five Layout panes available in JavaFx. Use appropriate Layout pane to create a form to add two numbers and print the result with suitable controls using JavaFx.
8. Develop an application to store and retrieve names and telephone numbers of people. The data should be stored in a database. The database should contain a table named PHONE_ENTRY which has the following fields.
• ID - Integer
• NAME - String
• TEL_NO - String
Enter data to the database manually. Design a Java servlet application which prompts the user to enter a name or a telephone number. The application should supply the names or telephone numbers matching the request. If no matches are found, the application should display a suitable message.
9. a) Discuss the life cycle of a Java servlet explaining the HTTP request methods in detail. [5]
b) Bring out the importance of Expression Tag and Declaration Tag in JSP with necessary code. [5]
10. a) With appropriate illustration give explanation of any five StringBuffer and StringBuilder class methods. [5]
b) Bring out the importance of lambda expression in Java? Write lambda expression for the following: [5]
• takes two integers and returns their multiplication
• takes two numbers and returns their difference
• takes no values and returns 50
• takes a string, prints its value to the console, and returns nothing.

