SPRING END SEMESTER EXAMINATION-2023
4ᵗʰ Semester B.Tech
WEB TECHNOLOGY
IT2004

(For 2022 (L.E), 2021 & Previous Admitted Batches)

Time: 3 Hours   Full Marks: 50

Answer any SIX questions.
Question paper consists of four SECTIONS i.e. A, B, C and D.
Section A is compulsory.
Attempt minimum one question each from Sections B, C, D.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable
and __all parts of a question should be answered at one place only__.

SECTION-A

1.   Answer the following questions.   [1 × 10]

(a)   How to specify a hyperlink in HTML and display the linked page in the new window or tab using target attribute?

(b)   Which loop structure can be used for an array without referring to the elements by index?

(c)   Identify the correct restriction on static methods.

I. They must access only static data.

II. They can call other static methods and non static method directly.

III. They cannot refer to this or super.

        A.   I and II

        B.   I, II and III

        C.   Only III

        D.   I and III

(d) What will be the output of the following program?

```java
class A {
    public A() {
        System.out.println("Base");
    }
}

class B extends A {
    public Derived() {
        System.out.println("Derived");
    }
}

class C extends B {
    public DeriDerived() {
        System.out.println("DeriDerived");
    }
}

public class Demo {
    public static void main(String[] args) {
        B b = new C();
    }
}
```

(e) Select the correct option for derived class <access – modifier>

```java
public class A{
    protected void display() {
        System.out.println("Display-base");
    }
}

public class B extends A {
```

```
< access - modifier > void display() {
    System.out.println("Display-derived");
  }
}
```

1. Only protected can be used.

2. public and protected both can be used.

3. public, protected, and private can be used.

4. Only public can be used.

(f) Which of the following is false statement about interface in java?

1. An interface can extend multiple interfaces.

2. All constant values defined in an interface are implicitly public, static, and final.

3. The interface body can contain abstract methods, default methods, and static methods.

4. Dynamic method object reference cannot be achieved using interface.

(g) What is the use of printStackTrace( ) method and from which class it belongs?

(h) What will be the output of the following program?

```
public class Test
{
    public static void main(String[] args)
    {
        StringBuffer sb = new StringBuffer("KIIT");
        System.out.println(sb.capacity());
    }
}
```

(i) What are the three standard Java IO streams and what is each used for?

(j) What is the use of PARAM tag/element in Applet? Explain PARAM tag with its attributes.

SECTION-B

2. (a) Write an HTML program for creating a nested list for Grocery shop. The main items of the list should be created as unordered list and should contain 5 items and each item should contain 3 sub items. The sub-items list should be ordered list and description list.   [4]

    (b) Write a program to accept an integer number (n) and the range lower bound (lb) to upper bound (ub), for example 0 to 100 from keyboard. In the program, design a class having two data members as an integer array and size, then store random integer elements to this array within the given range up to the size of the array. Then, rearrange the elements in such a way that the prime numbers will be stored at first then the non-prime numbers and it will be in sorted order (without using pre-defined sorting method). Now display the updated array.   [4]

3. (a) What is difference between POST and GET method in HTML? Write an HTML code which creates form to collect user information: name, address, email, phone no., age, gender, marital status, belongs to state, Submit and Clear buttons using text field, text area, email, radio button, check box, drop down box, submit and reset buttons tags.   [1+3]

    (b) Write a program in Java to create a class having two data members as an integer array and size, then input the elements to this array according to the size and reverse the last 'k' elements of this array leaving the   [4]

other elements in the same relative order without using any pre-defined function. Now display this updated array. (Use user-defined method as members based on the requirements)

SECTION-C

4. (a) Explain how many ways CSS styles can be specified for HTML elements with examples? Define CSS sector and its types with examples. [2+2]

   (b) Explain the importance of Dynamic Method Dispatch concept and write a program to implement Dynamic Method Dispatch concept. [1+3]

5. (a) Explain package and its contents in Java. Write a Java to find factorial value of the given number using user defined package "factorial" and use pre-defined method "fact" of the package in your program to compute factorial of the input received from console. [1+3]

   (b) If default and parameterized constructors be defined in an Abstract class, then how can they be invoked? Write a program to calculate the percentage of marks obtained in three subjects (each out of 100) by student A and in four subjects (each out of 100) by student B. Create an abstract class 'Marks' with an abstract method 'getPercentage'. It is inherited by two other classes 'A' and 'B' each having a method with the same name which returns the percentage of the students. The constructor of student A takes the marks in three subjects as its parameters and the marks in four subjects as its parameters for student B. Create an object for each of the two classes and print the percentage of marks for both the students. [1+3]

6. (a) Explain the difference between checked and unchecked   [1+3]
exception. Write a Java program to create user defined
exception for NegativeValueException if user enters
negative value. In the program, check if number is
negative then throw mentioned user defined exception.
Also catch that exception to display information of the
raised exception using pre-defined method and finally
display Exception successfully handled.

(b) How can input parameters be passed to an Applet from   [1+3]
Html page? Based on that write an applet program to
accept inputs name, roll number, and CGPA and display
these inputs inside a Rectangle shape in the Applet.

SECTION-D

7. (a) Differentiate throw and throws keywords are used in   [2+2]
Exception. Explain two approaches which are used to
handle Exception in checked exception with example.

(b) Write two constructors of PrintWriter class. Write a Java   [1+3]
program to copy a text file contents to another text file
using FileReader and BufferedReader to read characters
from input file and FileWriter and BufferedWriter to
copy in another file. Use read & write methods of
BufferedReader and BufferedWriter class.

8. (a) Describe the life cycle of an Applet. How do applets   [2+2]
differ from application programs?

(b) What are the advantages of StringBuffer class over   [1+3]
String class? Write a Java program to receive a string
from console using InputStreamReader and
BufferedReader, then use user defined functions to find
out length of the string and check whether a given
string is palindrome or not using StringBuffer class.

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