

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

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Course: Object Oriented Programming

Semester: 4

CourseCode: CSEG2016

Time: 2hr

Programme: B Tech CSE+BIG DATA

Max. Marks: 100

Instructions: All Questions are compulsory.

Note: Option shown in **BOLD** is the correct option.

1. Which of the options give the correct value of S after executing the following line?

```
String S = (new String("arach")).substring(0,2) +(new String("nophobia")).substring(3);
```

- A: "arachobia"
- B: "arnophobia"
- C: **"arhobia"**
- D: "rachobia"

2. Which of the following statements about Object-Oriented Programming (OOP) concepts is/are TRUE? Select all that apply.

A: **The functionality of a class is mainly determined by the methods defined in that class.**

B: **Inheritance is a mechanism which allows a class to borrow already implemented functionalities in another class without copying the code.**

C: Function overloading is possible when two functions have the same name and same argument list but the different return type.

D: **Interface is very similar to a class except that it only contains methods without implementation.**

3. Which of the following statements is/are TRUE? Select all that apply.

A: **A static method can be called without creating an object of that class.**

B: A static method cannot be called without creating an object of that class.

C: **Static function cannot access non-static variables/ fields of that class.**

D: **Static function cannot call non-static functions of that class.**

4. Which of the following statements is/are TRUE? Select all that apply.

A: The **sleep()** method of Thread class is used to pause the execution of a thread for the specified amount of time in seconds.

B: **By implementing Runnable, many threads can share the same object instance.**

C: **The join() method of Thread class allows the current thread to pause the execution and wait for the completion of another thread.**

D: **By extending Thread, each of your threads has a unique object associated with it.**

5. Choose the correct statement(s) in context to Interface and Abstract class in Java. Select all that apply.

A: We cannot create an instance of abstract class object or Interface object.

B: An abstract class cannot contain instance variables, whereas an interface can.

C: An interface typically doesn't provide implementations for any of its methods, whereas an abstract class does. However, In Java 8, implementation of default methods is allowed in interfaces.

D: It is possible to create an instance of abstract class object or Interface object.

6. Consider the following declaration:

```
String p = "INDIA";
```

```
String q = new String("INDIA");
```

```
String r = p;
```

Which of the following expression(s) will evaluate to true?

1. `p == q`

2. `p.equals(q)`

3. `r.equals(q)`

A: 1 only

B: 1 and 2 only

C: 2 and 3 only

D: 1, 2, and 3

7. Consider the following declarations:

```
String stmt = "Java and C++ both are object oriented";
```

What string will str refer to after execution of the following?

```
int x = stmt.indexOf("n");
```

```
String str = stmt.substring(9, 12) + stmt.substring(22, 22 + x);
```

A: C++ object

B: C++object

C: C++ e obje

D: C++e objec

8. Consider the following lines of code:

```
Integer x = new Integer(10) ;
```

```
Integer y = new Integer(100) ;
```

Which of the following statements if evaluated will NOT produce error ?

1. `if (x.intValue() == y.intValue())...`

2. `if ((x.intValue()).equals(y.intValue()))...`

3. `if ((x.toString()).equals(y.toString()))...`

A: 1 only

B: 2 only

C: 3 only

D: 1 and 3 only

9. Chose among the Java statements as given below will produce an error.

1. `double p = 98.3;`
`int q = p;`
2. `double p=98.3;`
`int q = (int) p;`
3. `int p = 98;`
`double y = x;`

A: 1 only

B: 2 only

C: 3 only

D: None will produce error

10. Choose the correct value of variable *eval* after executing the following statement.

```
eval = 9 - 4 * 5 / 3 % 4 ;
```

A: 7

B: 3

C: 0

D: 9

11. Predict the correct output of the following code:

```
for (int p = 5; p >= 1; p--) {  
    for (int q = p; q >= 1; q--)  
        System.out.print(2 * q - 1);  
    System.out.println();  
}
```

A:

9 7 5 3 1

9 7 5 3

9 7 5

9 7

9

B:

9 7 5 3 1

7 5 3 1

5 3 1

3 1

1

C:
 9 7 5 3 1
 7 5 3 1 -1
 5 3 1 -1 -3
 3 1 -1 -3 -5
 1 -1 -3 -5 -7

D:
 1 3 5 7 9
 1 3 5 7
 1 3 5
 1 3
 1

12. Choose the correct long literal from the given options.

- A: ABH9078
- B: L782200
- C: 703476
- D: **0xnf045L**

13. Which of the following options shows the *Inheritance* concept of Object-oriented programming?

- A: "has a" relationship
- B: **"is a" relationship**
- C: Aggregation
- D: "contains" relationship

14. Which of the following statement(s) is/are TRUE about Java programming language?

1. Just-In-Time (JIT) compiler improves the performance of Java
2. JIT compiler responsible to make a Java program platform independent.
3. Java Virtual Machine (JVM) creates a thread which is called by main thread.

- A: 1, 2, and 3
- B: 1 and 2 only
- C: **1 and 3 only**
- D: 2 and 3 only

15. Choose the correct statements from the given which describes best about making an abstract class.

- A: There should be atleast one member function as pure virtual function**
- B: There should be atleast one member function as virtual function
- C: Declaring as Abstract class using virtual keyword
- D: Declaring as Abstract class using static keyword

16. How many types of inheritance is supported at class level?

- A: 3**
- B:4
- C:5
- D:6

17. Read following sentences and choose CORRECT sentence in context to JAVA.

1. If we derive an abstract class and do not implement all the abstract methods, then the derived class should also be marked as abstract using 'abstract' keyword.
2. Abstract classes can have constructors.
3. A class can be made abstract without any abstract method.
4. A class can inherit from multiple abstract classes.

- A: 1 only**
- B: 1, and 2 only
- C: 1, 2, and 3 only
- D: All 1, 2, 3, and 4

18. Choose the correct statement(s) about package in Java.

1. There exists always a package for each class in Java
2. All the classes which exist inside a file are part of some package in Java
3. In case of package name is not specified, an unnamed package will be assigned to the classes in the file.
4. If no package is specified, a new package is created with folder name of class and class is put in this package.

- A: 1, 2 , and 3 only**
- B: 1, 2, and 4 only
- C: 1 and 2 only
- D: 2, 3, and 4 only

19. Choose the correct output or error message produced after evaluating the following Java program.

```
import static java.lang.System.*;
class PackageDemo {
public static void main (String[] args) {
    out.println("UPES");
    }
}
```

- A: UPES**
- B: Compile Time Error
- C: Run Time Error
- D: Package Error

20. Which of the following access modifiers can be used with a class name to access its member variables and methods by another class available in the same package ?

- A: public
- B: protected
- C: No access modifier
- D: **All of the above**

21. What should we use to compare whether two strings refer to the same memory reference or not?

- A: equals()
- B: compareTo()
- C: **equality operator**
- D: None

22.

Predict the output of the following code segment.

```
String s = "Java String Quiz";  
System.out.println(s.charAt(s.toUpperCase().length()));
```

- A: Convert "Z" to int 90 and prints "90"
- B: **Runtime Exception**
- C: Prints "z"
- D: Prints "Z"

23.

Predict the output of the code segment given below:

```
String p = "UPES";  
StringBuffer q = new StringBuffer(p);  
System.out.println(p.equals(q));
```

- A: True
- B: **False**
- C: ClassCastException at runtime
- D: Compile-time error

24.

Predict the output of the following code segment:

```
String s = "xyz";  
s = s + 1 + 2;  
s = s + (2 + 2);  
s.concat("1").concat("2");  
s.concat(" " + 2 + 2);  
System.out.print(s);
```

- A: **xyz124**
- B: xyz34124
- C: xyz124124
- D: xyz1241222

25. Predict the output of the Java program given below:

```
class BoolDemo {  
    public static void main(String[] args){  
        Boolean p = "TRUE" ;  
        Boolean q = "FALSE" ;  
        Boolean r = p && q ;  
        System.out.println(r) ;  
    }  
}
```

```
    }  
}
```

- A: TRUE
- B: FALSE
- C: false
- D: **Compiler time error**

26. Which of the following is used to create an object whose character sequence is mutable?

- A: String
- B: **StringBuffer**
- C: String and StringBuffer both
- D: Neither String nor StringBufer

27. Choose the correct statement(s) among the following given statements :

1. `reverse ()` method is used to reverse all the characters of a string.
2. `reverseall ()` method is used to reverse all the characters of a string.
3. `replace ()` method is used to replace first occurrence of a character in invoking string with another character.
4. `replace ()` method is used to replace last occurrence of a character in invoking string with another character.

- A: 1 and 3 only
- B: 2 and 4 only
- C: **1 only**
- D: 3 only

28. Which of the following are introduced in Java 8 as new features of Java?

1. Lambda expression
2. Method references
3. Default method
4. Stream API
5. Date Time API

- A: 1, 2, and 3 only
- B: 1, 2 only
- C: 1, 2, 3, and 4 only
- D: **All of the mentioned**

29. Which of the following represent(s) the characteristics of Java 8 Lambda expression?

1. Declaring type pf parameter is optional
2. Use of parenthesis is optional in case of only one parameter.
3. Use of curly braces in expression body is optional in case of single statement.

4. Use of return keyword is optional in case the body has a single expression to return the value.

- A: 1, and 2 only
- B: 2, and 3 only
- C: 1, and 3 only
- D: 1, 2, 3, and 4

30. While handling exception in a Java program, consider a situation if both *finally* and *catch* blocks return some value. Choose the appropriate option.

- A: Value returned by *finally* block will be considered.
- B: Value returned by *catch* block will be considered.
- C: Java interpreter will not enter in *finally* block.
- D: Both the values will be returned

31. Predict the output of the program given below:

```
public class ExceptionTest {
    public static void main(String[] args) {
        System.out.println("method return -> "+m());
    }

    static String m(){
        try{
            int i=10/0;
        }catch(ArithmeticException e){
            return "catch";
        }finally{
            return "finally";
        }
    }
}
```

- A: Runtime exception
- B: method return -> finally
- C: method return -> catch
- D: Compile time error

32. Which of the following statement(s) about *java.lang.Exceptions* is/are correct?

1. Exception class and its all subclasses are checked exceptions if its subclasses are not also subclasses of RuntimeException.
2. Error class and its all subclasses are unchecked exceptions.
3. RuntimeException class and its all subclasses are unchecked exceptions.

- A: 1, and 2 only
- B: 2, and 3 only
- C: 1, and 3 only
- D: 1, 2, and 3

33. Predict the output of the given Java program segment.


```

public class ExceptionTest {
    public static void main(String[] args)
    {
        method1();
        System.out.println("after calling m()");
    }

    static void method1(){
        method2();
    }

    static void method2(){
        method3();
    }

    static void method3(){
        throw new NullPointerException();
    }
}

```

- A: Runtime Exception
- B: Compile time error
- C: after calling m()
- D: None of the mentioned

34. Choose one of the given options which represents the advantage of a *final* class in Java.

- A: It promotes the principle “prefer inheritance over composition.”
- B: It simplifies class unit testing.
- C: **It helps to design immutable classes.**
- D: It prevents instantiation of the class.

35. Predict the output of the following Java program.

```

public class UPES
{
    private static int data = 10;
    private static int SCS()
    {
        class Info
        {
            public int data = 20;
            private int getData()
            {
                return data;
            }
        };
        Info info = new Info();
        return info.getData();
    }

    public static void main(String[] args)
    {
        System.out.println(data * SCS());
    }
}

```

- A: Compile time error
- B: **200**
- C: 10
- D: Run time error

36. Which of the following statement is correct with respect to Anonymous Inner class?

- A: It can extend exactly one class and implement exactly one interface.
- B: It can extend exactly one class and can implement multiple interface.
- C: **It can extend exactly one class or implement exactly one interface.**
- D: It can implement multiple interfaces regardless of whether it also extends a class.

37. Which of the following options constructs an instance of an anonymous inner class?

- A: `Runnable r = new Runnable() { };`
- B: `Runnable r = new Runnable(public void run() { });`
- C: `Runnable r = new Runnable { public void run(){}};`
- D: **`System.out.println(new Runnable() {public void run() { }});`**

38. Which of the following are NOT the valid constructors for Thread?

- 1. `Thread ()`
- 2. `Thread (int priority)`
- 3. `Thread (Runnable r, String name)`
- 4. `Thread (Runnable r, int priority)`
- 5. `Thread (Runnable r, ThreadGroup g)`

A: **2, 4 and 5 only**

B: 4, and 5 only

C: 1 and 3 only

D: 2 and 4 only

39. Predict the output of the following Java program:

```
import java.util.*;
class Array
{
    public static void main(String args[])
    {
        int array[] = new int [5];
        for (int i = 5; i > 0; i--)
            array[5-i] = i;
        Arrays.fill(array, 2, 4, 8);
        for (int i = 0; i < 5 ; i++)
            System.out.print(array[i]);
    }
}
```

A: 12885

B: 12845

C: 58881

D: **54881**

40. Predict the output of the following program:

```
class NewThread implements Runnable {
public void run () {
System.out.println("UPES");
}
}
public class ThreadDemo {
public static void main (String [] args) {
NewThread t1 = new NewThread();
t1.start();
System.out.println("SCS");
}
}
```

A:

SCS

UPES

B:
UPES

SCS

C: SCS
D: **Compile time error**

41. Read the following statements and choose the correct option:

1. Thread start () method is used to create a new thread.
2. Thread start () method calls run () method internally.
3. Thread run () method can also be called directly to create thread.
4. Thread execute () method is also used to create thread.

A: 1 only
B: **1, and 2 only**
C: 1, 2, and 3 only
D: All 1, 2, 3, and 4

42. Predict the output of the following Java program:

```
class MyRunnable implements Runnable{
    public void run(){
        for(int i=0;i<3;i++){
            System.out.println("i="+i+"
,ThreadName="+Thread.currentThread().getName());
        }
    }
}

public class MyClass {
    public static void main(String...args) throws InterruptedException{
        System.out.println("In main() method");
        MyRunnable runnable=new MyRunnable();
        Thread thread1=new Thread(runnable);
        Thread thread2=new Thread(runnable);
        thread1.start();
        thread1.join();
        thread2.start();
        thread2.join();
        System.out.println("end main() method");
    }
}
```

A:
In main() method
i=0 ,ThreadName=Thread-0
i=1 ,ThreadName=Thread-0
i=0 ,ThreadName=Thread-1
i=2 ,ThreadName=Thread-0

i=1 ,ThreadName=Thread-1
end main() method

i=2 ,ThreadName=Thread-1

B:

In main() method

i=0 ,ThreadName=Thread-0

i=1 ,ThreadName=Thread-0

i=0 ,ThreadName=Thread-1

i=2 ,ThreadName=Thread-0

i=1 ,ThreadName=Thread-1

i=2 ,ThreadName=Thread-1

end main() method

C:

In main() method

i=0 ,ThreadName=Thread-0

i=1 ,ThreadName=Thread-0

i=2 ,ThreadName=Thread-0

i=0 ,ThreadName=Thread-1

i=1 ,ThreadName=Thread-1

i=2 ,ThreadName=Thread-1

end main() method

D: Compiler error

43. Predict the output of the following Java program:

```

class MyRunnable1 implements Runnable{
    @Override
    public void run(){
        if(Thread.currentThread().getName().equals("Thread-1"))
            method1();
        else
            method2();
    }

    synchronized void method1(){
        System.out.println(Thread.currentThread().getName()
            +" in synchronized void method1() started");
        try {
            Thread.sleep(2000);
        } catch (InterruptedException e) {
            e.printStackTrace();
        }
        System.out.println(Thread.currentThread().getName()
            +" in synchronized void method1() ended");
    }

    synchronized void method2(){
        System.out.println(Thread.currentThread().getName()
            +" in synchronized void method2() started");
        try {
            Thread.sleep(2000);
        } catch (InterruptedException e) {
            e.printStackTrace();
        }
        System.out.println(Thread.currentThread().getName()+
            " in synchronized void method2() ended");
    }
}

public class MyClass {
    public static void main(String args[]) throws InterruptedException{

        MyRunnable1 myRunnable1=new MyRunnable1();

        Thread thread1=new Thread(myRunnable1,"Thread-1");
        Thread thread2=new Thread(myRunnable1,"Thread-2");
        thread1.start();
        Thread.sleep(10);//Just to ensure Thread-1 starts before Thread-2
        thread2.start();

    }
}

```

A:

Thread-1 in synchronized void method1() started
 Thread-2 in synchronized void method2() started
 Thread-2 in synchronized void method2() ended
 Thread-1 in synchronized void method1() ended

B:

Thread-1 in synchronized void method1() started
Thread-1 in synchronized void method1() ended
Thread-2 in synchronized void method2() started
Thread-2 in synchronized void method2() ended

C:

Thread-1 in synchronized void method1() started
 Thread-2 in synchronized void method2() started
 Thread-1 in synchronized void method1() ended
 Thread-2 in synchronized void method2() ended

D: Compiler error

44. Which of the following does not have an index based structure?

1. List
2. Set
3. Map
4. SortedList

- A: 1 only
B: 2 only
C: 3 only
D: 1 and 4 only

45. Which of the following allows duplicate elements?

- A: List
B: Set
C: Both List and Set
D: Neither List nor Set

46. Predict the output of the following Java program:

```
import java.util.Iterator;
import java.util.Vector;

public class VectorTest {
    public static void main(String args[])
    {
        Vector<String> vector= new Vector<String>();
        vector.add("1");
        vector.add("2");

        Iterator<String> iterator=vector.iterator();
        while(iterator.hasNext())
        {
            System.out.println(iterator.next());
        }
    }
}
```

A:
1

2

B:
1

2

3

C:
3

2

1

D: ConcurrentModificationException

47. Choose the correct statement(s) with respect to Collection framework.

1. Map extends Collection
2. Iterator extends Enumeration
3. Collection extends Cloneable and Serializable
4. Queue and List extend Collection

A: 2 only

B: 4 only

C: 2 and 4 only

D: 1, 3, and 4 only

48. Choose the correct statement(s) about the Java design patterns from the following:

1. Design patterns can be reused in different projects.
2. Creational design pattern cannot be used when a decision is made during instantiation of a class.
3. Objects using factory design patterns can be created without exposing the creation logic to the client and the client use the same common interface to create new type of object.
4. Objects using factory design patterns can be created without exposing the creation logic to the client but the client cannot use the same common interface to create new type of object.

A: 1, and 2 only

B: 1, and 3 only

C: 1, 2, and 3 only

D: 1, 2, and 4 only

49. Consider a scenario, A new student can take admission in UPES by contacting UPES admission cell. A new admission can be taken in 'B.Tech', 'B. Des.', and 'BA LLB' as per the student's choice. Let us have an abstract class 'ProgramChoice' with a static member function 'GetInfo' which depending on student's choice and previous record, will create and return object of 'B.TechProgram', 'B.DesProgram', or 'BA LLBProgram'. All the three programs need to gather the common details of students like name, address, marks etc.

Above design matches with which of the following design patterns?

A: Singleton design pattern

B: DAO design pattern

C: Factory design pattern

D: Facade design pattern

50. Choose the correct statement(s) about design patterns in Java.

1. Abstract factory classes are often implemented with factory methods but they cannot be implemented using prototype.
2. Creational design pattern gives a method to create objects while not showing the creation logic, rather than instantiating objects using new operator.
3. Behavioral design pattern are defined while developing and dealing with the communication between objects.
4. Singleton design pattern provides a way to create a single object only by defining a single class. This single object can be accessed without instantiating the class.

- A: 1, 2, and 3 only
 B: **2, 3 and 4 only**
 C: 1, 3, and 4 only
 D: All 1, 2, 3, and 4

51. Choose the correct statement(s) about design patterns in Java.

1. Structural design patterns concern class and object composition.
2. We cannot create a clone of a singleton object.
3. Creational design patterns do not concerned with communication between objects.
4. Design patterns are solutions to general problems that software developers faced during software development.

- A: 2, 3, and 4 only
 B: **1, and 4 only**
 C: 1, 3, and 4 only
 D: All 1, 2, 3, and 4

52. By writing `Class.forName()`, the driver class is loaded. Choose the correct statement(s) which describe the function of this class.

1. It dynamically loads the driver's class file into memory which automatically registers it.
2. This is the preferred method due to the fact that it allows us to make the driver registration configurable and portable.

- A: 1 only
 B: 2 only
 C: **Both 1 and 2**
 D: Neither 1 nor 2

53. Choose the correct option with respect to `ResultSet` class of JDBC:

1. `ResultSet` holds data retrieved from a database after execution of an SQL query using `Statement` objects.
2. `ResultSet` works as an `Iterator` to allow us to move through its data.
3. The **`java.sql.ResultSet`** interface represents the result set of a database query.

- A: 1 only
 B: 1, and 2 only
 C: 2, and 3 only
 D: **1, 2, and 3**

54. Which of the attribute of JSP page directive defines the MIME (Multipurpose Internet Mail Extension) type of HTTP response ?

- A: import
- B: Content Type**
- C: Extends
- D: Info

55. Which of the following contains the appropriate methods to connect with database using JDBC?

1. DriverManager
2. JDBC driver
3. Statement
4. Connection

- A: 2 only
- B: 1, and 2 both
- C: 3 only
- D: 4 only**

56. Choose the most suitable statement about Get method and Post method of sending requests to the Servlet.

- A: Get method is faster than Post method**
- B: Post method is faster than Get method
- C: Both Get and Post methods send the request with same speed.
- D: All the mentioned statements are incorrect about Get and Post methods.

57. Consider the following statements:

1. The service () method of Servlet is called by the web container and service method invokes doGet, doPost, doPut, doDelete, etc. methods as appropriate.
2. Therefore, you have nothing to do with service() method but you override either doGet() or doPost() depending on what type of request you receive from the client.

- A: Statement 1 and Statement 2 are correct and Statement 1 is the correct explanation of the Statement 2.**
- B: Statement 1 and Statement 2 are correct but Statement 1 is not the correct explanation of the Statement 2.
- C: Statement 1 is correct only.
- D: Statement 2 is correct only

58. Which of the following statement(s) is true about `init()` method of Servlet?

1. `init()` method is called by Servlet container exactly once after instantiating the Servlet.
2. Servlet cannot be serviced by Servlet container if the `init()` throws a `ServletException`.
3. Servlet cannot be serviced by Servlet container if the `init()` does not return within a time period defined by the Web server.

- A: Only 1
- B: 1, and 2
- C: 1 and 3
- D: 1, 2, and 3**

59. Consider the following statements and choose the correct option.

1. JSP can be seen as an extension of Servlet which supports all the functionality of Servlet.
2. In JSP, the business logic is mixed with the presentation logic while in Servlet business logic is differently written from the presentation logic.
3. Servlet needs to be redeployed after a modification while if JSP page is modified, there is no need to recompile and redeploy the web project.
4. JSP needs less code to be written as compared to Servlet.

- A:** 1, 2, and 3 only
B: 2, 3, and 4 only
C: 1, 3, and 4 only
D: 1, 2, 3, and 4

60. Match the following scripting elements of JSP.

A:

```
<%! int var = 10; %>
```

JSP declaration

B:

```
<% num1 = num1+num2 %>
```

JSP expression

C:

```
<%-- UPES End Sem Exam %>
```

JSP Comment

D:

```
<%@ page buffer = "8kb" %>
```

page directive