

**SRM UNIVERSITY**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**CYCLE TEST-II**

**IT1013- Programming in Java-Set A**

**DATE: 17.3.15**

**DURATION: 100 MINS**

**YEAR/SEM: II/IV**

**TOTAL MARKS: 50**

**INSTRUCTIONAL OBJECTIVES:**

To learn basic Java programming language features, new language features.

**STUDENT OUTCOMES:**

Outcome c - An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

c2 – Implement using coding standards

Outcome i - An ability to use current techniques, skills, and tools necessary for computing practice

i1 – Ability to use current techniques and tools.

i2 – Apply skills required to solve problems

**PART-A**

**ANSWER ALL THE QUESTIONS**

**(10\*1=10)**

1. \_\_\_\_\_ - method cannot be overridden
  - a. static
  - b. final
  - c. abstract
  - b. both a & b
2. class SampleDemo{  
public static void main(String args[]){  
String s="Java";  
s.concat(" Programming");  
System.out.println(s);        } }
  - a. Java Programming
  - b. JavaProgramming
  - c. Java
  - d. Programming
3. Which two of the following are legal declarations for abstract classes and interfaces?
  1. final abstract class Test { }
  2. public static interface Test { }
  3. final public class Test { }
  4. protected abstract class Test { }
  5. protected interface Test { }
  6. abstract public class Test { }
  - a. 1 & 2
  - b. 2&4
  - c. 3&6
  - d. 5&6
4. Analyze the following method signature and select the statement that must be true:  
*private int someMethod(int a, Object b, String c, char d)*
  - a. a is pass by reference, b is pass by value, c is pass by reference, and d is pass by value
  - b. a is pass by value, b is pass by reference, c is pass by reference, and d is pass by value
  - c. a is pass by reference, b is pass by reference, c is pass by reference, and d is pass by reference
  - d. a is pass by reference, b is pass by value, c is pass by value, and d is pass by value
5. In a nested class which of the following is true.
  - a. Only outer class can be static
  - b. Only inner class can be static
  - c. Both outer and inner class can be static
  - d. Static is not applicable for nested class.
6. Trace the output for the following code:

```

class Main {
    public static void main(String args[]){
        final int i;
        i = 20;
        i = 30;
        System.out.println(i);
    }
}

```

- a. 20 b. 30 c. compilation error d. Garbage value

7. which of the following is true?

- a. A class can extend more than one class
- b. An interface can implement many interface
- c. A class can extend one class and implement many interface
- d. A class can extend more than one class and implement more than one interface

8. Which of these is correct way of calling a constructor having no parameters, of superclass A by subclass B?

- a. super(void);.
- b. superclass().;
- c. super.A();.
- d. super();

9. Output of following Java Program?

```

class Base {
    public void show() {
        System.out.println("Base class show() is called");
    }
}

class Derived extends Base {
    public void show() {
        System.out.println("Derived class show() is called");
    }
}

public class Main {
    public static void main(String[] args) {
        Base b = new Derived(); //line 13
        b.show();
    }
}

```

- a. Derived class show() is called
- b. Base class show() is called
- c. Compilation error at line 13
- d. No compilation error, during execution throws exception

10. If a variable is declared as protected, then it can be used in \_\_\_\_\_

- a. Any class of any package, if the class is inherited.
- b. Any class of any package
- c. only in the specified class
- d. only in the specified package

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**PART-A**

**ANSWER ALL THE QUESTIONS**

**(10\*1=10)**

1. Which of these is supported by method overriding in Java?

- a) Abstraction                      b) Encapsulation                      c) Polymorphism                      d) inheritance

2.class output {

```
public static void main(String args[])
```

```
{  
StringBuffer c =new StringBuffer("Hello");
```

```
c.delete(0,2);
```

```
System.out.println(c);
```

```
}
```

a) He

b) Hel

c) lo

d) llo

3.A method without the body is called \_\_\_\_\_ method.

- a. protected                      b. final                      c. abstract.                      d. user defined.

4. \_\_\_\_\_ is passed to a method by use of call-by-reference.

- a. variables.                      b. objects.                      c. value                      d. operators.

5. What modifiers may be used with an inner class that is a member of an outer class?

- a. inner class may be declared only as public, protected  
b. inner class may be declared only as public, protected, private  
c. inner class may be declared only as static, final, or abstract  
d. inner class may be declared as public, protected, private, static, final, or abstract

6. which of these keywords is used to prevent content of a variable from being modified?

- a) final                      b) last                      c) constant                      d) static

7. Which of the following is correct way of implementing an interface salary by class manager?

- a) class manager extends salary { }  
b) class manager implements salary { }  
c) class manager imports salary { }  
d) None of the mentioned.

8. super keyword can be used to \_\_\_\_.

- a. call super class constructor.  
b. access super class member  
c. both a and b.  
d. none of the above

9. What is the output of this program?

```
class A {  
public int i;  
private int j;  
}  
class B extends A {  
void display() {  
super.j = super.i + 1;  
System.out.println(super.i + " " + super.j);  
}  
}  
class inheritance {  
public static void main(String args[])  
{  
    B obj = new B();  
obj.i=1;  
obj.j=2;  
obj.display();  
}  
}
```

- a) 2 2  
b) 3 3  
c) Runtime Error  
d) Compilation Error

10. Which of the following is correct way of importing an entire package 'pkg'?

- a) import pkg.  
b) Import pkg.  
c) import pkg.\*;  
d) Import pkg.\*;

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**PART- B**

**ANSWER ANY FOUR**

**(4\*4=16)**

11. Consider the following statement.

“August 15 is celebrated as the Independence day of India”. Write a program to change 15 to 26, August to January, Independence to Republic and finally print “January 26 is celebrated as the Republic day of India”.

12. Abstract or Interface which provide 100% abstraction. With necessary points justify your option?

13. Create an interface that declares methods min(), and max(). The member methods should return an int value that represents, the minimum value and the maximum value in an array.

14. Explain Dynamic Method dispatch.

15. List your understanding of static and final keyword.

**PART- C**

**ANSWER ALL THE QUESTIONS**

**(2\*12=24)**

**16. a) 1.** Design a simple class called “PurchaseItem” with following variables and methods

Variables:

String name;  
private double unitprice;

Methods:

public PurchaseItem( String name, double unitprice) -> to initialize the instance variables  
public double getPrice()-> to return the unitPrice.  
public String toString()-> to return the name of the item followed by @ symbol, then the unitPrice

**2.** Create two subclasses WeighedItem and CountedItem extends PurchaseItem. WeighedItem has an additional instance variable weight (double) in Kg while CountedItem has an additional variable quantity (int) both private.

private double weight // for WeighedItem class  
private int quantity; // for CountedItem

**3.** Write an appropriate constructor for each of the classes make use of the constructor of the superclass in defining those of the subclasses.

**4.** Override getPrice() that returns the price of the purchasedItem based on its unit price and weight (WeighedItem), or quantity (CountedItem). Make use of getPrice of the superclass.

[hint: // in PurchaseItem class  
public double getPrice(){  
return unitprice;

```

    }
    // in WeightedItem class
    public double getPrice(){
    return super.getPrice()*weight;
    }
}

```

5. Override toString() for each class making use of the toString method of the superclass in defining those of the subclasses. toString() should return something that can be printed on the receipt.

```

[ hint:
    // in PurchaseItem class
    public String toString(){
    return name+"@"+"t"+unitprice;
    }
    // in WeightedItem class
    public String toString(){
    return super.toString()+"t"+weight+"kg"+getPrice()+"Rs.";
    }
]

```

6. Write a java main class where you construct objects from the two subclasses and print them as shown.

Sample output:

banana@3.0	1.37kg	4.11Rs
pens@4.5	10units	45.0Rs

**(OR)**

**16.b)i)** Create a Vehicle class that is an abstract class defining the general details and actions associated with a vehicle. Create Car, Truck, and Minivan classes that inherit the Vehicle class. The Car, Truck, and Minivan classes should include additional member's specific to the type of vehicle being represented. Create a main class to test the classes. [Use: minimum of 2 variables in each class. Minimum of 3 methods in each class with argument and return type.]

**17. a.** i) Write a java program to find sum of first n natural numbers using recursion.

(6)

ii) Write a java program to add two numbers. Input the values using command line argument.

(6)

**(OR)**

**17.bi)** Justify the phrase "Strings are immutable" (3)

ii) Consider the string "I am a Java Expert ". Do the following operations

1. Extract the substring "Expert" (1)

2. Remove the extra space at the end. (1)

3. What is the character at position 7. (1)

ii) With supporting code explain different access control in java (6)

