

**KING SAUD UNIVERSITY**  
**COLLEGE OF COMPUTER AND INFORMATION SCIENCES**  
**COMPUTER SCIENCE DEPARTMENT**

**CSC 113: Computer Programming II**

**Midterm 1 (Duration: 1:45)**

**2<sup>nd</sup> Semester 1439-1440**

**Student Name (Arabic)**

**Serial Number**

**Question1:** Consider the class Item and its subclasses (in page 8) to answer the following  
**Multiple Choices (7 Pts.)**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
C	D	B	C	A	A	D	D	C	D	A	A	C	D

1. What are the lines where this can be deleted without affect code execution?

- A. Class Medicine line 12 and 13 ✓
- B. Class Medicine line 7 and 17
- ☒ C. Class Medicine line 28 and class Vitamins line 7
- D. Class Medicine line 7 and class Vitamins line 12

3. If the implementation of Vitamins constructor changed to

```
public Vitamins(String name, int p,
String usage, int w)
{ this.year=w; }
```

The compiler will produce an error?

- ☒ A. True
- B. False

2. What are the lines where super can be deleted without affect code execution?

- A. Class Medicine line 11 and class Vitamins line 6
- B. Class Medicine line 17 and class Vitamins line 11
- C. Class Medicine line 28 and class Vitamins line 11
- D. Class Vitamins line 17 and 18

4. If I removed method computeDose(int age) from Medicine and add it to Vitamins the compiler will produce an error because:

- A. getName() method is not in Medicine.
- B. Vitamins class is a direct subclass of Medicine.
- ☒ C. Medicine is not abstract.
- D. Vitamins class is not a direct subclass of Item.

5. If the implementation of print() method in class Vitamins changed to

```
public void print()
{
System.out.print(super.name+
"+super.price+" "+super.usage);
System.out.println(" "+this.year);
}
```

The compiler will produce an error?

- ☒ A. True
- B. False

6. Can I change the header of computeDose() method in class Medicine to  
public final int computeDose(int age)

- A. Yes
- ☒ B. No



7. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Item arr[] = new Item [2];
        arr [0] =new Item ("Augmentin");
        arr [1] =new Medicine ("Panadol",10,"
        headache");
        for(int i = 0; i<2 ; i++)
        System.out.print(arr[i].getName()+" ");
    }
}
```

- ☒ A. Augmentin Panadol
- ☐ B. null Panadol
- ☐ C. Augmentin null
- ☐ D. Error

8. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Vitamins obj =new Vitamins
        ("Centrum",10,"poor Diet",2019);
        System.out.print(obj);
    }
}
```

- ☐ A. Something like Vitamins@2a139a55
- ☐ B. Name:Centrum price: 10 Usage: poor Diet 2019
- ☐ C. Name:Centrum
- ☒ D. Name:Centrum price: 10 Usage: poor Diet

9. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Medicine Med =new Medicine
        ("Panadol",10,"headache");
        Vitamins obj= new
        Vitamins("Centrum",10,"poor Diet",2019);
        obj.merge(Med);
        System.out.print(Med.getName()+" "+
        obj.getName()); }
}
```

- ☐ A. Panadol Centrum null
- ☐ B. Panadol Centrum Panadol
- ☐ C. null Centrum Panadol
- ☐ D. Panadol Centrum Panadol

10. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Vitamins obj =new Vitamins
        ("Centrum",12,"poor Diet",2019);
        Medicine med = new Medicine
        ("Augmentin",100,"Flo");
        obj.getDescription(med);
    }
}
```

- ☐ A. Vitamins: 2019
- ☐ B. medicine: 0
- ☒ C. medicine: 2019
- ☐ D. Error

11. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Item obj =new Vitamins
        ("Centrum",10,"poor Diet",2019);
        obj.print();
    }
}
```

- ☐ A. Centrum 10 poor Diet 2019
- ☐ B. Centrum 10 poor Diet
- ☐ C. Centrum 10 poor Diet 0
- ☐ D. Error

12. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Vitamins obj =new Vitamins
        ("Centrum",10,"poor Diet",2019);
        System.out.println(obj.computeDose(7)
        );
    }
}
```

- ☒ A. medicine: Centrum 10
- ☐ B. medicine: null 10
- ☐ C. medicine: null 7
- ☐ D. Error

13. What is the output of following Java program?

```
public class Test
{
    public static void main (String[] args)
    {
        Item arr[] = new Item [3];
        arr [0] =new Medicine
        ("Augmentin",100,"Flo");
        arr [1] =new Medicine
        ("Panadol",10,"headache");
        arr[2]= new Vitamins("Centrum",10,"poor
        Diet",2019);
        for(int i = 0; i<3 ; i++)
            if (arr[i] instanceof Medicine)
                System.out.print(arr[i].getName()+" ");
    }
}
```

- A. Centrum
- B. Augmentin Panadol
- C. Augmentin Panadol Centrum
- D. Error

14. What is the output of following Java program?

```
public class Test
{
    public static void main (String[]
    args)
    {
        Item arr[] = new Item [3];
        arr [0] =new Medicine
        ("Augmentin",100,"Flo");
        arr [1] =new Medicine
        ("Panadol",10,"headache");
        arr[2]= new
        Vitamins("Centrum",10,"poor
        Diet",2019);
        for(int i = 0; i<3 ; i++)
            if (arr[i] instanceof Vitamins)
                System.out.print(arr[i].getUsage()+"
                ");
    }
}
```

- A. poor Diet
- B. Flo headache
- C. Flo headache poor Diet
- D. Error

## Class Item and its Subclasses for Questions #1

```
1 public abstract class Item
2 {
3     private String name;
4     public Item(String s)
5     {
6         name = s;
7     }
8     public String getName()
9     {
10        return name ;
11    }
12    public void setName(String n)
13    {
14        name=n ;
15    }
16    public String toString()
17    {
18        return "Name:"+name;
19    }
20    public abstract void print();
21    public abstract int computeDose(int age);
22 }

1 public class Medicine extends Item
2 {
3     public int price;
4     private String usage;
5     public Medicine ()
6     {
7         this(null,0,null);
8     }
9     public Medicine(String name, int p, String usage)
10    {
11        super(name);
12        this.price =p; ✓
13        this.usage=usage; ✓
14    }
15    public void print()
16    {
17        System.out.print(super.getName()+" "+this.price+"
18        "+this.usage+" "); ✓
19    }
20    public int computeDose(int age)
21    {
22        System.out.print("medicine: " + super.getName()+" ");
23        if (super.getName().charAt(0)=='V' && age >10)
24            return 7;
25        return 10;
26    }
27 }
```



```

26 public String toString()
27 {
28     return super.toString()+" price: "+this.price+" Usage:
"+this.getUsage();
29 }
30 public String getUsage()
31 {
32     return this.usage;
33 }
34 public void setUsage(String u)
35 {
36     this.usage=u;
37 }
38 }

```

```

1 public class Vitamins extends Medicine
2 {
3     private int year;
4     public Vitamins(String name, int p, String usage, int w)
5     {
6         super(name,p,usage);
7         this.year=w;
8     }
9     public void print()
10    {
11        super.print();
12        System.out.print(this.year);
13    }
14    public void merge (Item item)
15    {
16        Medicine M =(Medicine) item;
17        super.setName(super.getName()+" "+ M.getName());
18        super.setUsage(super.getUsage()+" "+M.getUsage());
19        M.setName(null);
20        M.setUsage(null);
21    }
22    public void getDescription(Item item)
23    {
24        System.out.println(item.getClass().getName()+" : "+
25        ((Vitamins)item).year);
26 }

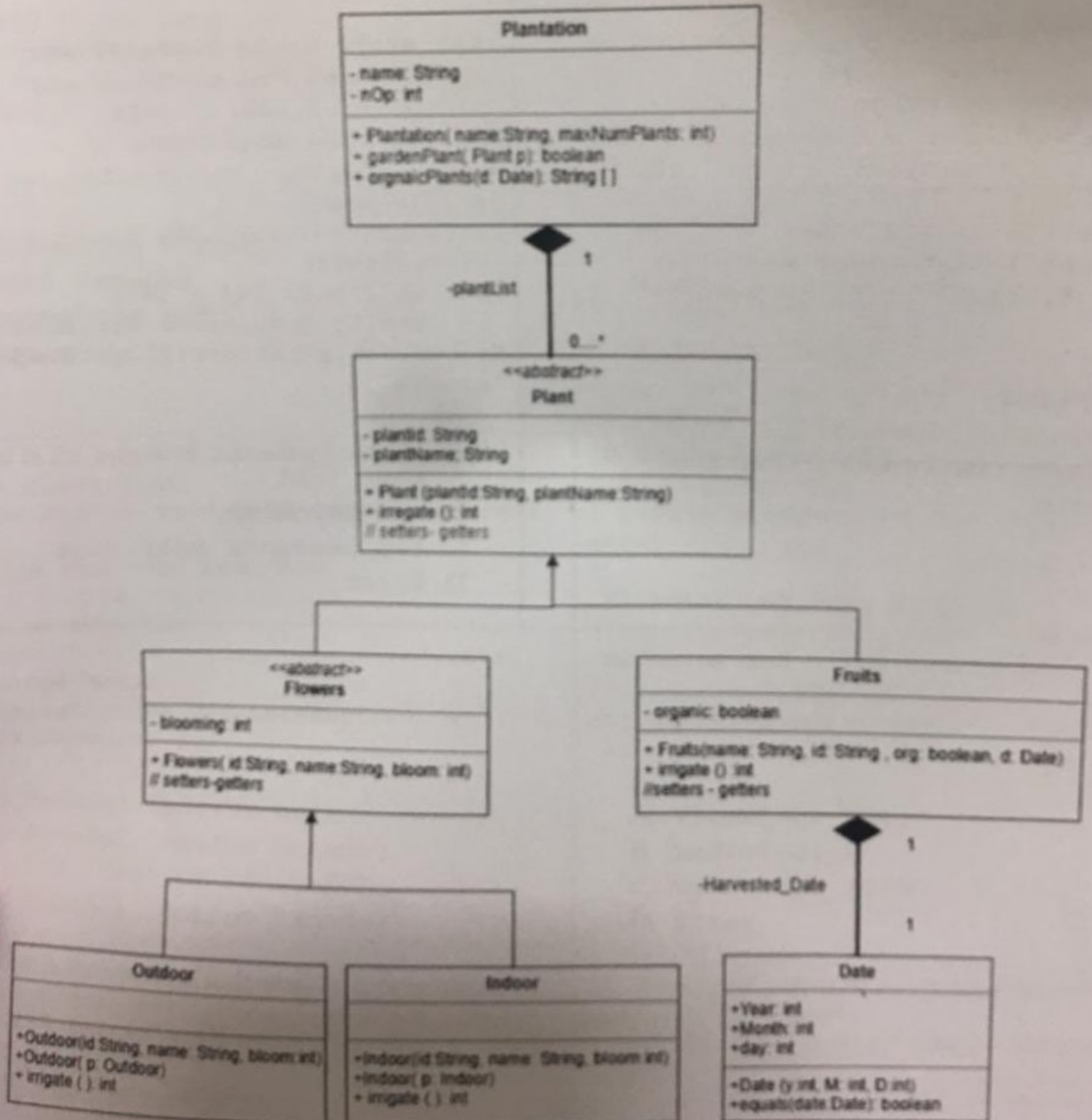
```

Augmentin, 100, 570

Medicine: —

Vitamins → Medicine

Question 2: Consider the following UML Diagram (8 Pts.)



1. Write the class header of Indoor class

```
public class Indoor extends Flowers { }
```

2. Implement the constructor of class Fruits

```
public Fruits (String name, String id, boolean org, Date d)
{
    Super(id, name);
    Organic = org;
    Harvested-Date = new Date(d);
}
```

3. Translate into Java code the following selected method from class plantation

```
public boolean gardenPlant( Plant p){
{
    if (nOP == PlantList.Length)
        return false;

    PlantList[nOP++] = new Plant(p.getId(), p.getName());
    return true;
}
```

قائمة من فوق حسب القوميات

```

public String [] organicPlants (Date date)
{
    String[] newArray = new String[nOP];

    for(int i=0, j=0; i<nOP; i++) {
        if((Fruit's) PlantList[i].getD() equals (date)) {
            newArray[j++] = PlantList[i].getName();
        }
    }

    return newArray;
}

```

*Handwritten notes: -0.25, Organic Plant, -0.5*

4. Write Java code Statements for the application class (main method)

- a. Create one Plantation called garden with the name "Al Mashtal" that contains a maximum of 10 plants.

```

Plantation garden = new Plantation("Al Mashtal", 10);

```

- b. Add indoor flower plant with the values (Id:"3224", name:"Orchid", blooming: 7) to the garden.

```

Garden.gardenPlant(new Plant("3224", "Orchid", 7));

```

*Handwritten note: -0.25*

- c. Print the name of all organic fruits in the garden that harvested in 2019-02-20.

```

String[] printList = garden.organicPlants(new Date(2019, 02, 20));
for (int i=0; i<printList.length; i++) {
    System.out.println(printList[i].getName());
}

```

*Handwritten notes: String!, -0.25*