



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)
Academic Year 2007 /2008 – 1st Year Examination – Semester 2

IT2203 - Programming I
09th August 2008
(TWO HOURS)

Important Instructions :

- The duration of the paper is **2 (two) hours**.
- The medium of instruction and questions is English.
- The paper has **45 questions** and **11 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from 0 (*All the incorrect choices are marked & no correct choices are marked*) to +1 (*All the correct choices are marked & no incorrect choices are marked*).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**

1) Select from among the following, valid statement(s) on Java.

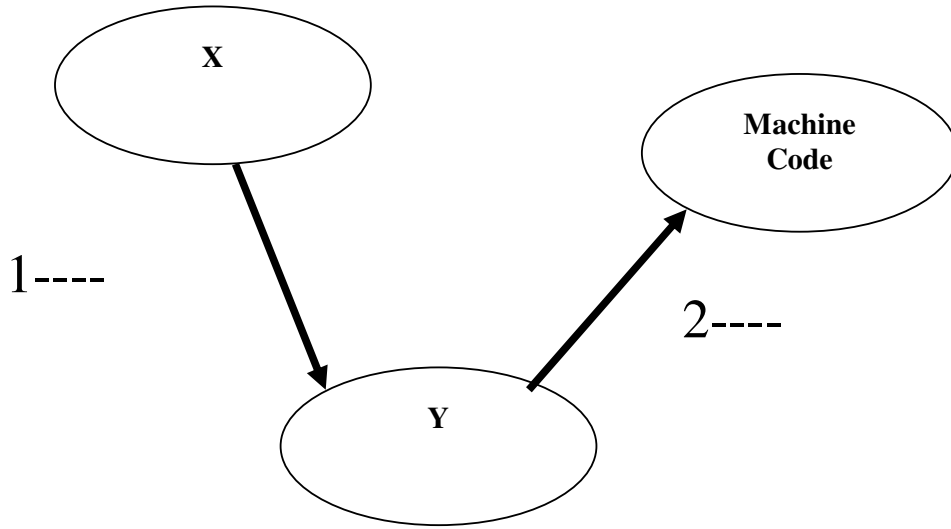
- | | |
|-----|--|
| (a) | Java is an object oriented programming language. |
| (b) | Java was developed by James Gosling. |
| (c) | First name given for Java is Oak. |
| (d) | Java was developed in the Microsoft Company. |
| (e) | Java was developed in 1991. |

2) Select from among the following, correct statements on Java programming language. Java is

- | | | | |
|-----|-----------------------------------|-----|-------------------------------------|
| (a) | a case sensitive language. | (b) | good in handling errors on its own. |
| (c) | capable of handling databases. | (d) | a platform independent language. |
| (e) | automatically collecting garbage. | | |

Consider the following diagram to answer questions 3 and 4.

The diagram shows some transformations which apply to some files which have some connections with the Java programming environment.



3) Select from among the following, correct terms which can be used for each blank indicated as 1---- and 2---- in the diagram considering Java and its programming environment.

- | | | | | | |
|-----|---------------|-----------------|-----|--------------|---------------|
| (a) | 1 – assembler | 2 – compiler | (b) | 1 – compiler | 2 – assembler |
| (c) | 1 – compiler | 2 – interpreter | (d) | 1 – javac | 2 – java |
| (e) | 1 – java | 2 – javac | | | |

4) Select from among the following, correct terms which can be used for the blanks marked as X and Y in the diagram considering Java and its programming environment.

- | | | | | | |
|-----|-------------|------------|-----|------------|-------------|
| (a) | X – B.class | Y – A.java | (b) | X – A.java | Y – A.class |
|-----|-------------|------------|-----|------------|-------------|

Use the following declarations and initializations to evaluate the Java expressions given in questions 12 - 16. Assume that each expression is evaluated separately in the program.

```
int a = 100, b = 3, c = 8, d = 6;
float num1 = 4.5f, num2 = 3.5f;
char ch = 'A'; // note that the ASCII value of A is 65.
String str = "Oshadha Ranasinghe =";
```

12) System.out.println(a - d * b + c);

- | | | |
|--------|--------|---------|
| (a) 70 | (b) 82 | (c) -82 |
| (d) 88 | (e) 90 | |

13) System.out.println(System.out.println(a = a++);

- | | | |
|---------|-----------|--------|
| (a) 100 | (b) 101 | (c) 99 |
| (d) 102 | (e) error | |

14) System.out.println(num1 + ch++);

- | | | |
|--------|-----------|----------|
| (a) 69 | (b) 79.5 | (c) 69.5 |
| (d) 70 | (e) error | |

15) System.out.println(str + a + d);

- | | |
|------------------------------|-----------------------------|
| (a) Oshadha Ranasinghe =1006 | (b) Oshadha Ranasinghe =106 |
| (c) strad | (d) str + 106 |
| (e) error | |

16) System.out.println(a - d + str + ch);

- | | |
|--------------------------------|-----------------------------|
| (a) 1006Oshadha Ranasinghe =65 | (b) a - d + str + ch |
| (c) 94strA | (d) 94Oshadha Ranasinghe =A |
| (e) 94Oshadha Ranasinghe =65 | |

Use the following declarations and initializations to evaluate the Java expressions given in questions 17 - 21. Assume that each expression is evaluated separately in the program.

```
char c='C'; // note that ASCII value of C is 67
int num1 = 1, num2 = 2, num3 = 3;
float x = 0.5f, y = 2.5f;
```

17) System.out.println((x <= num1) & (y == num2));

- | | | |
|----------|-----------|-----------|
| (a) true | (b) false | (c) error |
| (d) 4.0 | (e) 4 | |

18) System.out.println((x > y) ^ (num1 != num2));

- | | | |
|----------|-----------|-----------|
| (a) true | (b) false | (c) error |
|----------|-----------|-----------|

(d) 3.5 (e) 3

19) System.out.println(num1 | num2);

(a) true (b) false (c) error
(d) 3 (e) 4.5

20) System.out.println((num1 | num2) & (num1 != num2));

(a) true (b) false (c) error
(d) 4 (e) 3.5

21) System.out.println(num1 >= num2);

(a) true (b) false (c) error
(d) 3.5 (e) 3

22) Select from among the following, escape sequences which are valid in Java.

(a) \” (b) /’ (c) \t
(d) /t (e) /n

Consider the following program written in Java using a notepad and answer questions 23 - 24.

```
class Paper200823{
public static void main(String args[]){
    char a[]={o , o , h}; char b[]={k , s , a};
    char c[]= new char[6];
    for (int i=0,k=0,m=0;i<=c.length-1; ++i)
    {
        if(i%2 == 0){
            c[i] = a[k];
            k++;
        }
        else{
            c[i] = b[m];
            m++;
        }
    }
    for (int i=0;i<=c.length-1; ++i)
        System.out.print(c[i]);
}}
```

23) When compiling the above program, there will be errors generated. Select from among the following, statements which were the causes for generated errors.

(a) char a[]={o , o , h};
(b) for (int i=0,k=0,m=0;i<=c.length-1; ++i)
(c) c[i] = b[m];
(d) c[i] = a[k];
(e) char b[]={k , s , a};

- 24) What would the intended output of the program be, assuming if all the errors are fixed and executed?

(a) oohksa	(b) okosha	(c) ashoko
(d) ksaooh	(e) ooksha	

Consider the following program written in Java using a notepad and answer questions 25 - 27.

```
class Paper200825{
    public static void main(String args[]){
        int ar[]= new int[3],sum=0;

        for(int k=0 ; k<=ar.length ; k++)
            ar[k]=k+1;
        for(int r=0 ; r<=ar.length ; r++)
            sum+=ar[k];
        System.out.print(sum);
    }
}
```

- 25) Select from among the following, options which will cause the compilation errors of the program if they exist.

(a) int ar[]= new int[3],sum=0;	(b) for(int k=0 ; k<=ar.length ; k++)
(c) for(int r=0 ; r<=ar.length ; r++)	(d) System.out.println(sum);
(e) sum+=ar[k];	

- 26) Select from among the following, options which will cause for the runtime errors of the program if they exist.

(a) int ar[]= new int[3],sum=0;	(b) for(int k=0 ; k<=ar.length ; k++)
(c) for(int r=0 ; r<=ar.length ; r++)	(d) ar[k]=k+1;
(e) System.out.print(sum);	

- 27) What would the intended output of the program be, assuming that all errors are fixed (if they existed) and executed?

(a) 123	(b) 012	(c) 6
(d) 1	(e) 0	
2	1	
3	2	

- 28) Consider the following program written in Java.

```
class CommandLine{
    public static void main(String args[]){
        System.out.print(args[2]);
    }
}
```

After compiling successfully, the program is executed using the following command:

java CommandLine

What would the output of the program be?

- | | | |
|---------|-----------|-------|
| (a) 012 | (b) 12 | (c) 1 |
| (d) 2 | (e) error | |

- 29) Consider the following program written in Java taking note of the blanks indicated as BLANK1 and BLANK2.

```
class Paper200829{
public static void main(String args[]){
    BLANK1 {
        BLANK2
        System.out.print("&");
        System.out.println("");
    }
}
```

When the program is executed, the following output will be displayed in the command prompt.

```
&&&&&
&&&&
&&&
&&
&
```

Select from among the following, the correct option to fill those blanks to get the required output.

- | | |
|--|------------------------------------|
| (a) BLANK1 → System.out.println(""); | BLANK2 → System.out.println("&"); |
| (b) BLANK1 → for(int r=k ; r<=4 ; r++) | BLANK2 → for(int k=0 ; k<=4 ; k++) |
| (c) BLANK1 → k++; | BLANK2 → r++; |
| (d) BLANK1 → System.out.println("&"); | BLANK2 → for(int k=0 ; k<=4 ; k++) |
| (e) BLANK1 → for(int k=0 ; k<=4 ; k++) | BLANK2 → for(int r=k ; r<=4 ; r++) |

- 30) Consider the following program written in Java.

```
class Paper200830{
    public static void main(String args[]){
        for(int i=0; i<= 4 ; i++){
            if(i * 2 - 2 <= 4 ) continue;
            System.out.print(i);
        }
    }
}
```

What would the output of the program be?

- | | | |
|-----------|----------|--------|
| (a) 01234 | (b) 0123 | (c) 34 |
| (d) 4 | (e) 0 | |
| | 1 | |
| | 2 | |
| | 3 | |
| | 4 | |

- 31) Consider the following program written in Java taking note of the blanks indicated as BLANK1 and BLANK2.

```
class Paper200831{
    public static void main(String args[]){
        int i=3;
        do{
            BLANK1
            i--;
        }
        BLANK2
    }
}
```

When the program is executed, the following output will be displayed in the command prompt.

3210

Select from among the following, the correct option to fill those blanks to get the required output.

- | | |
|-------------------------------------|---------------------------------|
| (a) BLANK1 → System.out.print(i); | BLANK2 → while(i>=0); |
| (b) BLANK1 → while(i>=3); | BLANK2 → i++; |
| (c) BLANK1 → i++; | BLANK2 → while(i<=3); |
| (d) BLANK1 → System.out.print(i++); | BLANK2 → while(i<=0); |
| (e) BLANK1 → System.out.print(i); | BLANK2 → System.out.print(i++); |

Consider the following program written in Java using a notepad and answer questions 32 - 34.

```
public class Problem{
    private static int i;
    Problem(){
        i++;
        System.out.println("Customer" + i);
    }
}

public class Paper200832{
    public static void main(String args[]){
        Problem a=new Problem();
        Problem b=new Problem();
    }
}
```

- 32) Select from among the following, a suitable file name that can be used to save the above program.

- | | |
|-------------------------------|----------------------|
| (a) Problem.java | (b) Paper200832.java |
| (c) Paper200832.java.txt | (d) Problem.txt |
| (e) public class Problem.java | |

33) If errors exist in the program, identify the erroneous statement(s) from among the following.

- | | |
|---|------------------------------|
| (a) public class Problem | (b) private static int i; |
| (c) i++; | (d) public class Paper200832 |
| (e) System.out.println("Customer" + i); | |

34) What would the intended output of the program be, assuming that all the errors are fixed and executed?

- | | |
|---------------|---------------|
| (a) Customer0 | (b) Customer1 |
| (c) Customer0 | (d) Customer1 |
| Customer0 | Customer2 |
| (e) Customer2 | |

Consider the following program written in Java using a notepad and answer questions 35 - 39.

```
abstract class A{
    private String name;

    public abstract double earnings();

    A(String n){name = n;}
}

final class B extends A{
    private double salary, commission;

    B(String na,double f,double c){super(na);
        salary = f;
        commission = c;}

    public double earnings(){
        return salary + (salary * commission)/100;}
}

class C extends A{
    private double dayPay;
    private int attendance;

    C(String na,double dp,int a){super(na);
        dayPay = dp;
        attendance = a;}

    public double earnings() {return dayPay * attendance;}
}

class DriverProgram{
    public static void main(String args[]){

    }
}
```

35) What are the sub classes/child classes which are written in the program?

- | | | |
|------------------|------------------|------------------|
| (a) Only A | (b) Only B | (c) Only A and B |
| (d) Only B and C | (e) Only A and C | |

- 36) Select from among the following, signatures of constructor methods which are available in the program.

(a) public abstract double earnings()	(b) B(String na,double f,double c)
(c) A(String n)	(d) C(String na,double dp,int a)
(e) public double earnings()	

- 37) Assume that one has included the following segment of code in the same notepad and compiled. The program has generated errors.

```
class D extends B{
    D(String y,double a,int x){super(y,a,x);}
}
```

Select from among the following, the statement(s) which caused the generated errors.

(a) abstract class A
(b) final class B extends A
(c) public abstract double earnings();
(d) D(String y,double a,int x){super(y,a,x);}
(e) B(String na,double f,double c){super(na);salary = f; commission = c;}

- 38) Assume that one has modified the main() method of the program in the following way and compiled the program. The program has generated errors.

```
class DriverProgram{
    public static void main(String args[]){
        A obj= new A("Anjalee Iddamalgoda");
    }
}
```

Select from among the following, the statement(s) which caused the generated errors.

(a) abstract class A
(b) final class B extends A
(c) public abstract double earnings();
(d) D(String y,double a,int x){super(y,a,x);}
(e) B(String na,double f,double c){super(na);salary = f; commission = c;}

- 39) Assume that one has again modified the main() method of the program in the following way and compiled the program successfully.

```
class DriverProgram{
    public static void main(String args[]){
        B obj= new B("Oshadha Ranasinghe",50000.0f,50);
        System.out.println(obj.earnings());
    }
}
```

What will the output be when the above program is executed?

(a) 82500.0	(b) 50000	(c) 50
(d) 75000.0	(e) error	

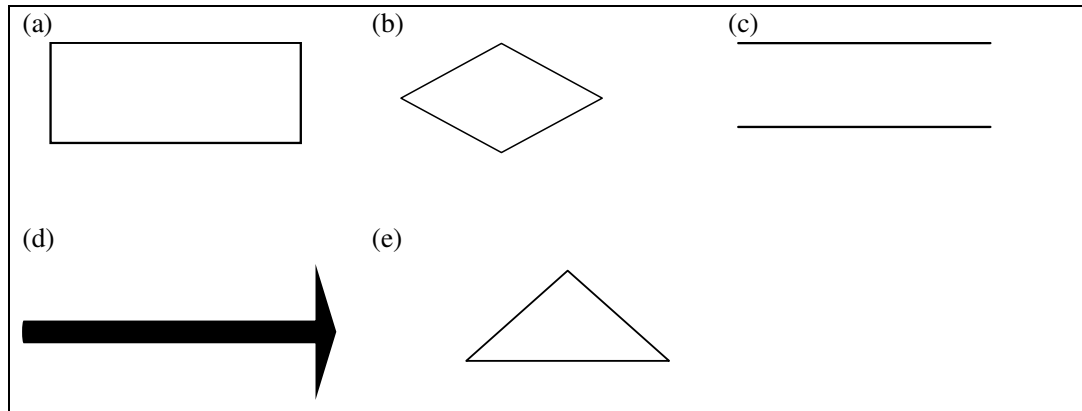
- 40) Select from among the following, the software design tool(s) which emerged from structured programming.

- | | |
|-----------------------------------|-------------------------|
| (a) Pseudocode | (b) Modular programming |
| (c) Nassi-Shneiderman(NS) diagram | (d) Object Orientation |
| (e) Flow charts | |

- 41) Select from among the following, the correct statement(s) on local data.

- | |
|---|
| (a) Local data is data defined within a procedure for access by that procedure only. |
| (b) Definition of local data removes the need to pass the data from one procedure to another. |
| (c) Local data provides a means of keeping data private within a procedure. |
| (d) The names given to local data items are specific to the procedure in which it is defined. |
| (e) Local data represents processes diagrammatically. |

- 42) Select from among the following, valid notations which are used in Flow Charts.



- 43) Select the exception classes from among the following which are **not** part of the java.lang package.

- | | |
|----------------------|---------------------------|
| (a) Exception | (b) EOFException |
| (c) RuntimeException | (d) MalformedURLException |
| (e) IOException | |

- 44) Consider the following segment of a program written in Java.

```
String str1=new String("Fareena"); String str2="Praveena";  
System.out.println(str1+=str2);
```

What will the output be when it is executed as a program?

- | | | |
|---------------------|--------------|---------------------|
| (a) error | (b) Fareena | (c) FareenaPraveena |
| (d) PraveenaFareena | (e) Praveena | |

- 45) Consider the following statements written in Java.

```
String str1 = "University of Colombo School of Computing";  
String result = str1.substring(32); System.out.println(result);
```

What will the output be when it is executed as a program?

(a) Computing
(c) School of Computing
(e) University

(b) University of Colombo
(d) Colombo
