UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

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IT2203 - Programming I

11th August 2007

(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 **12 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 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 statements on Java?

(a) Java is considered as the first ever object oriented programming language.
(b) SIMULA69 is the first name given for Java.
(c) Java was developed during world war II (1939 – 1945)
(d) Java was developed by James Gosling.
(e) Sun Microsystems is the company in which the Java was developed.

2) Select from among the following, the official web site of the Java programming language.

(a) www.yahoo.com
(b) www.google.com
(c) java.sun.com
(d) sun.java.com
(e) www.java.com

3) In the installed Java platform 2, one can identify several separate components. What are they?

(a) Java virtual environment
(b) Java server pages
(c) Java application programming interface
(d) Java scripts
(e) Java beans

4) Consider the following expression.

"A computer within another computer"

Select from among the following, the correct terms which can be used to emphasize the idea of the above expression in relation to Java environment.

(a) Byte code
(b) Source code
(c) Compile
(d) Java virtual environment
(e) Platform independency

5) Which of the following is a/are correct statement(s) in connection with Java?

a) JDK 1.5 version will be released on 2009.
b) Java programs can be run on Linux.
c) Java has a powerful ability of manipulating pointers.
d) Java source files can be coded using Microsoft word documents.
e) Java's memory cleaning is automatic.

6) Consider the following two assumptions.

Assumption 1: One has installed Java software in the following directory.
C:\Program Files\Java\jdk1.5.0_07
Assumption 2: The path for the working directory is as follows.
D:\Oshadha
Select from among the following, the correct statement one has to type in the command prompt as a way to setting the path of the Java software temporarily. Assume that the computer which is being used has the Windows XP operating system installed.

(a) C:\Program Files\Java\jdk1.5.0_07
(b) set path= C:\Program Files\Java\jdk1.5.0_07;%path%
(c) D:\Oshadha
(d) set path= C:\Program Files\Java\jdk1.5.0_07\bin;%path%
(e) D:\Oshadha path= C:\Program Files\Java\jdk1.5.0_07

Consider the following program written in Java using a notepad to answer questions 7 - 9.

```
class MySelf{
  private String name;
  private int age;
   MySelf(){}
   MySelf(String a, int b){ name = a; age = b;}

public void setName( String n) {name = n;}

public void setAge( int a) { age = a;}

public void display(){ System.out.println(name + " " + age);}
}

  public class DriverPro{
  public static void main(String args[]){
    MySelf singer= new MySelf("Whitney Houston", 38);
    MySelf leader= new MySelf();
       leader.display();
   }
  }
```

7) After saving the program by giving the file name MySelf.java, what is the output when compiled using the following command?

javac MySelf.java

(a) MySelf.class	(b) MySelf.java
(c) Myself.java	(d) DriverPro.class
(e) error	

8) After saving the program by giving the file name DriverPro.java, what would the output be when compiled by using the following command?

javac DriverPro.java

(a) MySelf.class	(b) MySelf.java
(c) Myself.java	(d) DriverPro.class
(e) error	

9) Consider the following statement which is used in Java.
java DriverPro

What would be the output in the command prompt if the above command is given after successfully compiling the DriverPro.java source file?

(a) ("Whitney Houston", 38);	(b) "Whitney Houston", 38
(c) Whitney Houston 38	(d) singer leader
(e) null 0	

10) Select from among the following, the correct variable names which are accepted in Java.

(a) thirdYearStudents	(b) _Mark	(c) 3YearStudents
(d) $ForHelpingNugegoda	(e) &Sign	

11) Select from among the following, correct variable declarations and initializations which are accepted in Java.

(a) int myNum = 34;	(b) long myValue=3456734555666;
(c) String homeTown = "Padukka";	(d) float decimalValues = 34.98;
(e) boolean flag= "True";	

12) Which of the following operators is/are having higher_precedence than the bitwise OR (|) operator?

(a) **!=**	(b) [ ]	(c) ( )
(d) ? :	(e) %	

13) Which of the following statements is/are correct about the comments used in Java?

(a) Comments are always written at the top of a Java source file.
(b) // notation is used for single line comments.
(c) Comments are ignored by the Java compiler.
(d) Documentation comments occur within /** and */ notations.
(e) Multi line comments are written within /* and */ notations.

14) Consider the following program written in Java.

```
public class Ex14{
  public static void main(String ar[]){
   int num1,num1;
    num1=num1=7;
   System.out.println(num1+num1);
      }
}
```

Which of the following statements is/are **incorrect** on the above program?

(a) *public* key word cannot be used in front of a *class* key word.
(b) *String ar[]* is an illegal usage of a parameter within the *main()* method.
(c) The statement *int num1,num1;* is illegal in the Java programming language.
(d) The program can be compiled without any syntax errors.
(e) Since Java is a case sensitive programming language, the program cannot be executed.

15) Consider the following program written in Java.

```
class Ex15{
enum Day{Monday,Tuesday,Wednesday,Thursday,Friday,Saturday,Sunday}

public static void main(String args[]){
 Day yesterday =Day.Wednesday;
 Day today=Day.Thursday;
 Day tomorrow=Day.Friday;

   System.out.println(yesterday);
   System.out.println(today);
   System.out.println(tomorrow);
 }
}
```

What would the output be of the above program?

(a) Wednesday Thursday Friday	(b) 2 3 4
(c) 2 3 4	(d) Monday Tuesday Wednesday
(e) 0 1 2	

Use the following declarations and initializations to evaluate the Java expressions given in questions 16 - 20. Assume that each expression is evaluated separately in the program.

```
int var1=5, var2=6, var3=7;
char ch='A';//note that the ASCII value of A is 65
```

16) System.out.println(var1 + var3 % var2);

(a) 18	(b) 11	(c) 6
(d) 13	(e) 10	

17) System.out.println(System.out.println(ch++ + var1);

(a) 70	(b) 71	(c) error
(d) 65	(e) 66	

18) System.out.println(var3=++var3);

(a) 1	(b) 6	(c) 8
(d) error	(e) 7	

19) System.out.println(var1 + var3+" is the result");

(a) 12 is the result	(b) 57 is the result	(c) 11 is the result
(d) 56	(e) error	

20) System.out.println("Result =" + var1 * var3);

(a) Result =35	(b) Result = 57	(c) Result= 3
(d) error	(e) Result = 12	

21) Consider the following program written in Java.

```
class Ex21{
          public static void main(String args[])  {
String[]
names={"Oshadha","Kaushika","Fathima","Sanjeewa","Neelam","Kanchana"};
           names[2]="Nuwan";
               for(int i=5;i>=3;i--)
                          if(i%2==0)
                             System.out.println(names[i]);
                              } }
```

What would the output be of the above program?

(a) Oshadha	(b) Kanchana	(c) Neelam
(d) Sanjeewa Neelam Kanchana	(e) Oshadha Kaushika Fathima	

22) Consider the following program written in Java.

```
public class Ex22 {
 public static void main(String args[])  {
      int ar[]={2,4,6,8,10};
      int total=0;
            for (int i=0;i<=ar.length-1; ++i)
                        total+=ar[i];
             System.out.print(total);
   }
}
```

What would the output be of the above program?

(a) 30	(b) 2 4 6 8 10	(c) error
(d) 10 8 6 4 2	(e) 20	

23) Select from among the following, some concepts of object orientation.

(a) Inheritance	(b) Case sensitivity	(c) Enumeration types
(d) Integer	(e) Polymorphism	

24) Select from among the following, a suitable definition which can be used to describe recursive methods.

(a) A method that calls itself is described as a recursive method.
(b) A recursive method is an object that is a named set of variables of the same type.
(c) A recursive method means the ability to assume several different forms or shapes.
(d) A recursive method is a sequence of characters between double quotes.
(e) A recursive method provides the means of initializing the instance variables uniquely.

Consider the following program written in Java using a notepad to answer questions 25 - 29.

```
class Sphere{

static final double PI = 3.14;
static int count = 0;

  double radius;
  double xCenter;
  double yCenter;
  double zCenter;

 Sphere(){}

  Sphere(double theRadius,double x,double y,double z) {
                radius = theRadius;
                xCenter = x;
                yCenter = y;
                zCenter = z;
}
static int getCount(){
return count;
  }
}
```

25) Select from among the following, names of class variables which are used in the program.

(a) radius	(b) PI	(c) count
(d) xCenter	(e) zCenter	

26) Select from among the following, names of instance variables which are used in the program.

(a) radius	(b) PI	(c) count
(d) xCenter	(e) zCenter	

27) Select from among the following, the correct signature(s) representing (a) constructor(s).

(a) Sphere()
(b) Sphere(double theRadius,double x,double y,double z)
(c) static int getCount()
(d) return count;
(e) class Sphere

28) If the following command is given in the command prompt after compiling the program there will be an error generated.

java Sphere

Select from among the following, the correct reason(s) for the generated error.

(a) The *main()* method is not written in the program.
(b) The source file is not saved in the correct folder.
(c) *java* is not an accepted command in Java programming.
(d) Java bytecode file is not generated in the working folder.
(e) Java software is not properly installed in the computer.

29) What would the output be if the following program is written in another notepad and saved in the same folder and executed?

```
class DriverProgram{
   public static void main(String args[]){
                    Sphere obj1=new Sphere();
                    Sphere obj2=new Sphere();
                    Sphere obj3=new Sphere();
                    Sphere obj4=new Sphere();

                 System.out.println(obj3.count);
            }
          }
```

(a) 0	(b) 1	(c) 2
(d) 3	(e) 4	

30) Select from among the following, characteristics of professional software development.

(a) Large and complex systems are involved with several people.
(b) Documentation is not necessary since the author is not using the system.
(c) The elegance or style with which the software is written is more important.
(d) Systems are maintained by the people other than the authors of the systems.
(e) Once a system is developed, it will continue to be enhanced and amended to meet the changing environment in which it operates.

31) Which of the following switch statements is/are correct or legal?

(a)
```
char c = 'P';
switch (c) {
  case 'Y': System.out.println("Ok"); break;
  case 'N': System.out.println("No");  break;
  default: System.out.println("Try ");
}
```

(b)
```
String s = "Yes";
      switch (s) {
case "Yes": System.out.println("Ok");
break;
    case    "No":    System.out.println("No");
break;
   default: System.out.println("Try");}
```

(c)
```
int i = 2;
    switch (i) {
  case 1:
  case 2: System.out.println("Ok"); break;
  default: System.out.println("Try Again");
 }
```

(d)
```
int c = 7;
switch (c) {
  case 6: System.out.println("Ok"); break;
  case 7: System.out.println("No");  break;
  default: System.out.println("Try");
   }
```

(e)
```
int i = 3;
switch (i-1) {
  case 1: System.out.println("Yes"); break;
  case 2: System.out.println("No"); break;
}
```

32) Consider the following segment of a Java program.

```
public static void main(String args[])  {
                int j=0,k=5;
                    do{
                      System.out.print(k);
                      k+=5;
                      j++;
                       } while (j<4);
                   }
```

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

(a) 555	(b) 101010	(c) 123
(d) 51015	(e) 151515	

33) Consider the following segment of a Java program.

```
int num, alpha = 10;
    num = 4;
   switch (num){
           case 3: alpha++;break;
           case 4:
           case 6: alpha = alpha + 3;
           case 8: alpha = alpha + 4;break;
           default: alpha = alpha + 5;
               }
System.out.println(alpha);
```

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

(a) 15	(b) 16	(c) 17
(d) 18	(e) 19	

34) Select from among the following, correct expressions which are allowed in Java.

(a) (val1 < val2)	(b) (val1 =< val2)	(c) (val1 != val2)
(d) (val1 > val2)	(e) (val1 => val2)	

35) Consider the following segment of a Java program.

```
int sum = 0,num = 10;
    if (num > 0)
     sum = sum + num;
   else
      if (num > 5)
     sum = num + 15;
```

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

(a) 5	(b) 10	(c) 15
(d) 25	(e) 35	

36) Select from among the following, the **incorrect** statements on different software design tools.

(a) Flow charts are diagrammatic representations of the flow of logic in a program.
(b) Nassi_Shneiderman(NS) diagrams emerged as a tool from Object Oriented Programming.
(c) Pseudocode is a diagrammatic tool which emerged as an Object Oriented Programming design tool.
(d) When compared to Flow charts, Nassi-Shneiderman(NS) diagrams are constructed without using arrows.
(e) In Pseudocode, there are no provisions for data definitions and scoping.

37) Consider the following program written in Java.

```
class Streams{
public static void main(String args[]){
int a=5,b=4,c=7;

System.out.printf("%3$d  %1$d  %2$d", a,b,c);
 }
}
```

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

(a) 3$d 1$d 2$d (b) a b c (c) 5 4 7
(d) 7 4 5 (e) 7 5 4

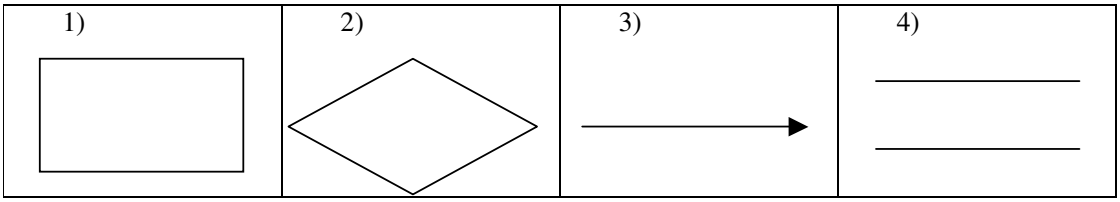
38) Select from among the following, subclasses of the Reader class.

(a) PipedReader (b) FileOutputStream
(c) FilterReader (d) StringReader
(e) FileWriter

39) Select from among the following, (a) suitable definition(s) on procedures.

(a) Procedures process data.
(b) By using data definitions one can deal with data procedures.
(c) It is difficult to write suitable procedures without an understanding of the nature of the user.
(d) Procedures bring the design process much closer to the coding process.
(e) Procedures are diagrammatic representations of processes.

40) Consider the following notations which are used in Flow Charts.



Identify the names for the above notations from the following list.

i) Process or operation
ii) Terminator
iii) Flow of logic
iv) Decision
v) Class

Match correct notations with their corresponding names and select from among the following the correct answer.

(a) 1) → i), 2) → ii), 3) → iii), 4) → iv)	(b) 1)→ i), 2) → iv), 3) → v), 4) → ii)
(c) 1) → v), 2) → ii), 3) → iii), 4) → iv)	(d) 1)→ i), 2) → v), 3) → iv), 4) → iii)
(e) 1) → i), 2) → iv), 3) → iii), 4) → ii)	

41) Select problems from among the following which might cause a program to crash.

(a) Memory errors	(b) Network errors
(c) File system errors	(d) Calculation errors
(e) Array errors	

42) Consider the following program written in Java.

```
class Ex42{
public static void main(String args[]){
 try{
    System.out.println("Beginning");
    int i=0;
    double y=2.0/i;
    System.out.println("Middle");
   }
 finally{
   System.out.println("Final");
   } } }
```

What will the output be when the program is executed?

(a) Beginning	(b) Middle
(c) Beginning Middle Final	(d) Beginning Final
(e) Final	

43) Consider the following program written in Java.

```
class Ex43{
public static void main(String args[]){

 String str1=new String("Welcome to Java");
 String str2="Welcome to Java";

System.out.println(str1==str2);
 }
}
```

What will the output be when the program is executed?

(a) Welcome to Java	(b) Welcome to Java welcome to Java
(c) Welcome to Java Welcome to Java	(d) true
(e) false	

44) Consider the following statements written in Java.

```
String str1=new String("Welcome to Java");
String str2=str1;
```

Select statements from among the following which **cannot** be applied with the above two statements in any program.

(a) str1>=str2	(b) int i = str1.length
(c) String s3 = str1 + str2;	(d) str1.charAt(3)='5';
(e) str2=new String("BIT");	

45) Consider the following sentence assigned to a *String* variable having the name *str*.

ABCABC

It is required to change the content of the *str* variable as follows.

AbCAbC

Select suitable methods from among the following which can be used to achieve the targeted task.

(a) str.toLowerCase()	(b) str.toUpperCase()
(c) str.replace('B','b')	(d) str.replace('b','B')
(e) str.replace("ABCABC","AbCAbC")	

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