UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY

Academic Year 2019 – 1st Year Examination – Semester 2

IT2205 - Programming I

02nd November, 2019

(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.**

Consider the following program to answer questions 1 – 4.

```
public class Ex1{
public static void main (String args[]){
System.out.println("Good Luck");
}
}
```

1) Select from among the following keyword(s) that can be seen in the program.

(a) class	(b) static	(c) void
(d) public	(e) main	

2) Select from among the following valid file name(s) to save the above program.

(a) Ex1.java	(b) class.java	(c) java.java
(d) Ex1.java.txt	(e) Ex1.txt.java	

3) Select from among the following valid command(s) to compile the program.

(a) Java Ex1.java	(b) javac Ex1	(c) javacompile
(d) compile	(e) javaCompile	

4) Select from among the following valid option(s) that can be used to execute the Java program.

(a) java Ex1.java	(b) **java Ex1**	(c) class
(d) javajava	(e) Ex1.txt.java	

Consider the following program to answer questions 5 – 6.

```
public class Ex5{
public static void main (String args[]){
System.out.print("1");
System.out.print("2");
                **/
System.out.print("3");
System.out.print("4");
System.out.print("5");
                 /
}
}
```

5) What would the output of this program be?

(a) 12345	(b) 1234	(c) 345
(d) 12	(e) error	

6) Select from among the following, valid comments in the Java programming language.

(a) //	(b) **/ /	(c) /* */
(d) */ /*	(e) \\	

7) Select from among the following, correct option(s) which illustrate(s) primitive data types in Java.

(a) byte	(b) char	(c) String
(d) Integer	(e) Math	

8) Select from among the following, correct option(s) which illustrate(s) reference data types in Java.

(a) byte	(b) char	(c) String
(d) Integer	(e) System	

Consider the following program to answer questions 9 – 10.

```
public class Ex9{
public static void main (String args[]){
byte b;
int i=258;
double d=325.59;
b=(byte)i;
System.out.print(b+" ");
i=(int)d;
System.out.print(i+" ");
b=(byte)d;
System.out.print(b+" ");
}
}
```

9) What would the output of this code be?

(a) 258 325 325	(b) 2 325 59	(c) 2 325 69
(d) 25 325 325	(e) error	

10) Consider the following sample expressions available in the program.

```
b=(byte)i;
i=(int)d;
b=(byte)d;
```

Select from among the following, correct option(s) to name the above conversion process practiced in the expressions.

(a) automatic conversion	(b) comparison	(c) casting
(d) saving	(e) debugging	

11) Select from among the following, valid variable names in Java.

(a) number	(b) firstName	(c) _notation
(d) $value	(e) STATIC	

12) Select from among the following, valid logical operators in Java.

(a) &	(b) &&	(c) |
(d) ||	(e) !	

13) Consider the following program written in Java.

```
public class Ex10{
public static void main (String args[]){
int radius=3;
float areaOfCircle=Math.PI*radius*radius;
System.out.println(areaOfCircle);
}
}
```

What would the output of this code be?

(a) 28	(b) 28.344444	(c) 28.34
(d) 28.34445	(e) error	

Consider the following program to answer questions 14 – 15 noting the blank1, blank2 and blank3.

```
public class Ex14{
public static void main (String args[]){
System.out.println("Programming blank1 isblank2 fun blank3");
}
}
```

14) When the program is executed successfully, the following output is displayed on the console.

Programming
i fun"

Select from among the following, valid literals to fill the blanks.

(a)	blank1 → //	blank2 → /*	blank3 → \\
(b)	blank1 → //	blank2 → /* */	blank3 → &
(c)	blank1 → \\	blank2 → \\\\	blank3 → \\\\\
(d)	blank1 → \n	blank2 → \b	blank3 → \"
(e)	blank1 → \n	blank2 → \t	blank3 → \\

15) Select from among the following, the valid name(s) for the selected literal category.

(a) Arithmetic	(b) logical	(c) **Escape sequences**
(d) ASCII	(e) Bitwise	

16) Consider the following sentence in English noting the **blank**.

Java is a ----------**blank**----------programming language;

Select from among the following the correct option(s) to fill the blank in the sentence.

(a) object oriented
(b) platform independent
(c) case sensitive
(d) weakly typed
(e) multithreaded

Use the following declarations and initializations to evaluate the Java expressions given in questions 17 - 22. Assume that expressions are evaluated separately in a separate program.

```
int num1=070,num2=0b00101010;
float x=20.0f;
int var=12_00_000;
char ch='A';//note  that the ASCII value of A is 65
```

Select from among the given options, the correct output for each of the evaluations 17 – 22.

17) `System.out.println(var);`

(a) 12_00_000	(b) 12,00,000	(c) 12-00-000
(d) 1200000	(e) error	

18) `System.out.println(num1);`

(a) 070	(b) 70	(c) 07
(d) 56	(e) error	

19) `System.out.println(num2);`

(a) 0b00101010	(b) 0b	(c) 00101010
(d) 42	(e) error	

20) `System.out.println(x+var);`

(a) 1200020.0	(b) 12,00,020.0	(c) 12,00,020
(d) 12_00_020_0	(e) error	

21) `System.out.println(x>num1);`

(a) false	(b) true	(c) 62.0f
(d) 62.0	(e) error	

22) `System.out.println(ch+x);`

(a) A+20.0f	(b) A20	(c) 85.0
(d) A20.0	(e) error	

23) Select from among the following, valid exception class(es) which is/are referenced when a division by zero error occurs.

(a) NumberFormatException
(b) ArithmaticException
(c) IOException
(d) NullPointerException
(e) ArrayIndexOutOfBoundException

24) Select from among the following, valid exception class(es) which can be categorized as unchecked exceptions.

(a) NumberFormatException
(b) ArithmaticException
(c) IOException
(d) NullPointerException
(e) ArrayIndexOutOfBoundException

25) Select from among the following, valid exception class(es) which can be categorized as checked exceptions.

(a) NumberFormatException
(b) ArithmaticException
(c) IOException
(d) NullPointerException
(e) ArrayIndexOutOfBoundException

Consider the following program to answer questions 26 – 27.

```
public class Ex25{
public static void main (String args[]){
try  {
                nt a, b;
                b = 0;
                a = 5 / b;
                System.out.print("A");
            }
            catch(ArithmeticException e)  {
          System.out.print("B");
            }
      }
}
```

26) Select from among the given options, the correct output of the program.

(a) 0	(b) 5	(c) A
(d) B	(e) error	

27) Select from among the following, the valid option(s) that can be categorized under the key words ***try*** and ***catch*** which are used for exception handling in Java.

(a) throw	(b) throws	(c) Scanner
(d) finally	(e) number1	

Consider the following table having two columns in it. The first column has line numbers and the second has different programing statements and expressions. Using this table answer questions 28 – 31.
Each question gives an expected output to be obtained. It also gives the class declarations and its main method. One is required to select from this table the relevant statement number(s) required to obtain the expected output.

No.	Statements and expressions
1	`{`
2	`}`
3	`for(int i=0;i<=3;i++)`
4	`for(int i=0;i<4;i++)`
5	`for(int j=0;j<=4;j++)`
6	`for(int j=0;j<=3;j++)`
7	`System.out.println("*");`
8	`System.out.print("*");`
9	`System.out.print();`
10	`System.out.println();`
11	`if( i != j )`
12	`if( i == j )`
13	`else`
14	`System.out.print(“A”);`
15	`System.out.println(“A”);`
16	`System.out.print(“ “);`
17	`if( i+j == 30 )`
18	`import java.java.*;`
19	`if( i = j  )`
20	`else( i = j )`
21	`for( j=0;j<=3;j++)`
22	`if( i = j  ):`
23	`for(int j=0,j<=,j++)`
24	`elif`
25	`if( i+j == 3  )`
26	`>>`
27	`<<`
28	`if( i+3 = 3  )`

28) Expected output:

```
****
****
****
****
```

Select from among the following, the correct statement number sequence(s) to obtain the pattern shown above.

```
public class Ex28{
public static void main(String args[]){
```

(a) 6,1,4,8	(b) 3,1,6,8	(c) 6,1,5,8,9,23
(d) 4,1,6,8	(e) 6,1,6,8,23,2	

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

29) Expected output:

A***
*A**
**A*
***A

Select from among the following, the correct statement number sequence(s) to obtain the pattern shown above.

```
public class Ex29{
public static void main(String args[]){
```

(a) 6,1,4,11,8,13,14	(b) 6,1,6,11,8,,13,14	(c) 4,1,6,11,8,13,14
(d) 6,1,5,11,8,13,14,9,2	(e) 3,1,6,11,8,13,14	

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

30) Expected output:

 AAA
A AA
AA A
AAA

Select from among the following, the correct statement number sequence(s) to obtain the pattern shown above.

```
public class Ex30{
public static void main(String args[]){
```

(a) 6,1,4,11,14,13,16	(b) 4,1,6,11,14,13,16	(c) 3,2,6,1,14,13,14,10,1
(d) 3,1,6,11,14,13,16	(e) 6,1,4,11,16,13,14	

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

31) After seeing the pattern shown in question number 30), the software engineer changed the coding of the program to obtain the following pattern.

   A
  A
 A
A

Select from among the following, the correct statement number sequence(s)to obtain the pattern shown above.

```
public class Ex31{
public static void main(String args[]){
```

(a) 6,1,4,25,14,13,16	(b) 27,1,4,2,9,18,27	(c) 7,1,8,9,2,11,25,26,27,2
(d) 7,2,8,8,2,10	(e) 6,1,9,17,18,1	

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

32) Select from among the following, correct option(s) where the **applet** class is located.

(a) java.applet	(b) java.io	(c) java.awt
(d) java.lang	(e) java.sql	

33) Select from among the following, the sub class(es) of the **Reader** class.

(a) FileReader	(b) FileWriter	(c) ClassReader
(d) ClassWriter	(e) InputReader	

34) Consider the following program written in Java.

```
public class Ex34{
    public static void main(String args[]) {
       int arr[] = {10, 20, 30, 40, 50};
       for(int i=0; i <= arr.length; i++)
       {
             System.out.print(" " + arr[i]);
       }
    }
}
```

Select from among the following the output of the program.

(a) 10	(b) 10 20	(c) 10 20 30 40
(d) 10 20 30 40 50	(e) error	

35) Consider the following program written in Java.

```
class Ex35 {
      public static void main(String args[]){
         int ar[]=new int[-1];
         System.out.println(ar.length);
      }
  }
```

What would the output of the program be?

(a) -1	(b) -2	(c) 1
(d) 0	(e) error	

Consider the following program to answer questions 36 – 37.

```
class Car{
private int carNo;
class Engine{
int engineNo;
}
}
class Ex36 {
            public static void main(String args[]){
              Car obj1=new Car();
              Car.Engine obj2=obj1.new Engine();
               System.out.println(obj2.engineNo);
            }
        }
```

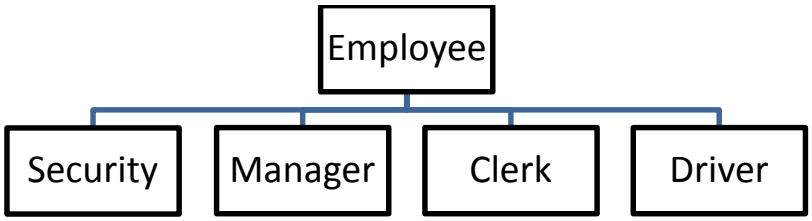
36) What would the output of the program be?

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

37) Select from among the following, name(s) of (the) byte code(s) which has/have been generated after compiling the program successfully.

(a) Car.class	(b) Car$Engine.class	(c) Ex36.class
(d) Engine$Car.class	(e) Ex36$Car.class	

Consider the following diagram to answer for questions 38 - 42.



38) Select from among the following, the valid option(s) that can be considered as super classes in the given diagram.

(a) Employee	(b) Manager	(c) Clerk
(d) Driver	(e) Security	

39) Select from among the following, the valid option(s) that can be considered as child classes in the given diagram.

(a) Employee	(b) Manager	(c) Clerk
(d) Driver	(e) Security	

40) Select from among the following, valid option(s) where one can apply the key word ***abstract*** during class declaration considering the given scenario.

(a) Employee	(b) Manager	(c) Clerk
(d) Driver	(e) Security	

41) Select from among the following, valid option(s) where one can apply the key word ***final*** during class declaration considering the given scenario.

(a) Employee	(b) Manager	(c) Clerk
(d) Driver	(e) Security	

42) A software engineer has written the following method signatures in the class Clerk.

```
Clerk()
Clerk(String name, String address)
```

Select from among the following suitable name/s to identify the methods.

(a) Instance variables	(b) Instance methods	(c) class variables
(d) class methods	(e) constructors	

43) Consider the following partially written programs in Java.

```
class A{ }
class B { }
interface In1{}
Interface In2{}
Interface In3{}
Interface In4{}
```

Select from among the following the valid programming statement(s) in Java.

(a) interface In5 extends In4,In1{ }	
(b) class C extends A,B{ }	
(c) class D extends In1{ }	
(d) interface In6 implements B{ }	
(e) class E implements In1,In3{ }	

Consider the following program to answer questions 44 – 45.

44) Consider the following program written in Java.

```
class Grandparent {
    public void Print() {
        System.out.println("Grandparent");
    }
}
class Parent extends Grandparent {
    public void Print()   {
        System.out.println("Parent");
    }
}
class Child extends Parent {
    public void Print() {
        super.super.Print();
        System.out.println("Child");
    }
}
public class Ex45{
    public static void main(String[] args) {
        Child c = new Child();
        c.Print();
    }
}
```

What would the output of the program be?

(a) Grandparent	(b) Parent	(c) Child
(d) c.Print();	(e) error	

45) Select from among the following, the valid object oriented feature(s) used in the program.

(a) data abstraction	(b) inheritance	(c) method overriding
(d) polymorphism	(e) database access	

****