



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2021 – 1st Year Examination – Semester 1

IT1406 – Introduction to Programming
Multiple Choice Question Paper

(TWO HOURS)

Important Instructions :

- The duration of the paper is **2 (two) hours**.
- The medium of instruction and questions is English.
- The paper has **40 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 (*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.**
- Calculators are **not** allowed.
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1) Java is a strongly typed language, it checks data types mainly at:

- | | | |
|-----------------------|----------------------|--------------------|
| (a) code editing time | (b) compile time | (c) debugging time |
| (d) code writing time | (e) file saving time | |

2) Consider the following program written in Java.

```
public class FirstProgram{  
    public static void main(String args[]){  
        System.out.println("Bachelor of Information Technology Degree");  
    }  
}
```

Which in the above is an identifier?

- | | | |
|------------|------------------|----------|
| (a) public | (b) main | (c) args |
| (d) String | (e) FirstProgram | |

3) Which of the following is/are valid keyword(s) for declaring symbols of a character set, such as letters and numbers.

- | | | |
|------------|----------|-------------|
| (a) String | (b) long | (c) Scanner |
| (d) double | (e) char | |

4) Which of the following is/are valid option(s) which illustrate the dynamic initialization of variables in the Java programming language.

- | |
|--|
| (a) int a=4; |
| (b) double c = Math.sqrt(a * a + b * b); |
| (c) double value=45000.9; |
| (d) double areaOfCircle=Math.PI*radius*radius; |
| (e) char ch='A'; |

5) Which of the following is/are the valid expression(s) in the Java programming language?

- | | | |
|----------------------|------------------------|----------------------|
| (a) int value1=023; | (b) int value3="ucsc"; | (c) int value5=1000; |
| (d) int value2=0xEE; | (e) int value4=0B1111; | |

6) Which of the following is/are the valid literal(s) in the Java programming language?

- | | | |
|-------------------|----------------------|------------------------|
| (a) char ch1=033; | (b) char ch4=0B1100; | (c) char ch5="\u00BB"; |
| (d) char ch3='@'; | (e) char ch2=AAA; | |

7) Consider the following program written in Java.

```
public class ThirdProgram{
    public static void main(String args[]){
        {
            int value = 10;
        }

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

Which of the following is/are the output of the program?

- | | | |
|--------|-----------|-----------|
| (a) 10 | (b) 1 | (c) value |
| (d) 0 | (e) error | |

8) Which of the following is/are the best practice(s) of modularization?

- | |
|---|
| (a) Each module can be assigned to perform just one function. |
| (b) Modules used in one program can also be used in other programs. |
| (c) Modules should help to avoid the repetition of writing out the same segment of code more than once. |
| (d) Modules can be designed in such a way that they are not self-contained. |
| (e) Modules can be designed in such a way that they have little or no effect on other modules within the program. |

Use the following program to answer questions 9 - 12.

```
public class Ex1{
    public static void main(String args[]){
        int ar[][] = new int[4][];
        ar[0] = new int[1];
        ar[1] = new int[2];
        ar[2] = new int[3];
        ar[3] = new int[4];
        int i, j, k = 0;
        for(i=0; i<4; i++)
            for(j=0; j<i+1; j++) {
                ar[i][j] = k;
                k++;
            }
        for(i=0; i<1; i++) {
            for(j=0; j<i+1; j++)
                System.out.print(ar[i][j] + " ");
            System.out.println();
        }
    }
}
```

9) Which of the following is/are the valid number of rows available in the array?

- | | | |
|------------|------------|------------|
| (a) Only 1 | (b) Only 2 | (c) Only 3 |
| (d) Only 4 | (e) Only 5 | |

10) Which of the following is/are the number of columns available in the second row of the array?

- | | | |
|-------|-------|-------|
| (a) 1 | (b) 2 | (c) 3 |
| (d) 4 | (e) 5 | |

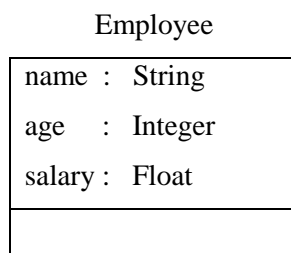
11) Which of the following is/are the generic name(s) that can be given to the array?

- | | | |
|----------------------------|---------------------------------|---------------------------------|
| (a) Single dimension array | (b) Array of arrays with 5 rows | (c) Array of arrays with 3 rows |
| (d) Ragged array | (e) Array of arrays with 2 rows | |

12) Which of the following is/are the output of the program?

- | | | |
|----------------------|----------------------------|--------------------|
| (a) 0 | (b) 0
10 | (c) 0
10
100 |
| (d) 0
123
4567 | (e) 0
12
345
6789 | |

Consider the following diagram to answer questions 13 – 19.



13) Which of the following is/are the valid name(s) which is/are suitable for a Class similar to the Employee class in the illustration.

- | | | |
|-------------|-------------|-------------|
| (a) Oshadha | (b) Car | (c) Wagon R |
| (d) Shape | (e) Manager | |

14) Which of the following is/are the valid option(s) which are logical to use the word extend with the Employee class.

- | | | |
|-------------------|--------------|---------|
| (a) Suvin Nimanka | (b) Manager | (c) Car |
| (d) Clerk | (e) Security | |

15) Consider the following segment of code written in Java based on the above diagram noting **blank1** and **blank2** by considering instance variable declarations.

```
blank1 blank2 age;
```

Which of the following is/are the valid option(s) to fill the **blank1** and **blank2**?

- | | | |
|---------------------|----------------------|---------------------|
| (a) blank1 → static | (b) blank1 → private | (c) blank1 → String |
| (d) blank2 → int | (e) blank2 → boolean | |

16) Which of the following is/are the valid option(s) which is/are in the same category as private in the Java programming language.

- | | | |
|-------------|------------|---------------|
| (a) public | (b) main | (c) protected |
| (d) default | (e) static | |

17) Consider the following segment of Java code noting blanks indicated by **blank1**, **blank2**, **blank3** and **blank4**.

```
blank1 blank2 blank3(String name){
    blank4.name = name;
}
```

And consider the following table with suggested options to fill the blanks considering the numbers assigned to them.

blank1		blank2		blank3		blank4	
1	default	1	instanceof	1	setName	1	setName
2	private	2	short	2	getName	2	super
3	static	3	byte	3	String	3	this
4	public	4	void	4	main	4	main

Which of the following is/are the valid option(s) to fill the blanks?

- | | | |
|-------------|-------------|-------------|
| (a) 1,2,3,4 | (b) 2,4,4,3 | (c) 4,4,1,3 |
| (d) 3,3,3,2 | (e) 2,1,2,1 | |

18) Consider the following segment of code noting **blank1**, **blank2**, and **blank3**.

```
blank1 blank2 blank3() {  
    return age;  
}
```

Consider also the following table with suggested options to fill the blanks considering the numbers assigned to them.

blank1		blank2		blank3	
1	default	1	int	1	setName
2	private	2	double	2	getSalary
3	protected	3	Integer	3	setAge
4	public	4	void	4	getAge

Which of the following is/are the valid option(s) to fill the blanks?

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

19) Which of the following is/are the valid constructor(s) for the Employee class?

(a) public Employee()	(b) public void Employee()	(c) public int getSalary()
(d) Employee()	(e) Name()	

20) Which of the following is/are the different approach(es) that Java run time follows to reach a package created by you.

(a) Searching for the packages in the current working folder.
(b) Searching for the packages specified in the interface specifications.
(c) Searching for packages according to the setting of the CLASSPATH environment variable.
(d) Searching for the packages settings in the Java Documentations.
(e) Searching at compile time and run time according to the specifications of the -classpath option.

21) Which of the following is/are the valid interface implementation(s) in Java?

- | |
|--|
| (a) Interface5 implements class8{ } |
| (b) interface extends class9, class2{ } |
| (c) interface implements interface{ } |
| (d) Class2 implements Interface4{ } |
| (e) Class2 implements Interface2,Interface3{ } |

Use the following declarations and initializations to evaluate the Java expressions given in questions 22 - 25. Assume that expressions are evaluated separately in a separate program.

```
String str1="University of";  
String str2="Colombo";  
char ch1='A';//note that the ASCII value of A is 65  
char ch2='C';
```

Which of the following is/are the correct output for each of the evaluations 22 – 25.

22) `System.out.println(str2 + ++ch1);`

- | | | |
|--------------|--------------|--------------|
| (a) ColomboA | (b) ColomboB | (c) ColomboC |
| (d) Colombo | (e) error | |

23) `System.out.println(ch1 + ch2);`

- | | | |
|--------|-----------|--------|
| (a) A | (b) 132 | (c) AC |
| (d) CA | (e) error | |

24) `System.out.println(str1+str2);`

- | | | |
|-------------------|--------------------------|-----------------|
| (a) University of | (b) University ofColombo | (c) 11991123344 |
| (d) Colombo | (e) error | |

25) `System.out.println(str1 > str2);`

- | | | |
|--------------|-----------|----------|
| (a) 01010101 | (b) 3333 | (c) true |
| (d) false | (e) error | |

26) Consider the following Java expression. It will cause an exception to be occurred.

```
String s="abc";  
int i=Integer.parseInt(s);
```

Which of the following is/are the valid exception class(es) related to that error?

- | | | |
|-------------------------|---------------------------|--------------------------|
| (a) ArithmeticException | (b) NumberFormatException | (c) NullPointerException |
| (d) SQLException | (e) IOException | |

27) Which of the following is/are the valid option(s) which can be categorized under the RuntimeException class.

- | | | |
|-------------------------|---------------------------|--------------------|
| (a) ArithmeticException | (b) NumberFormatException | (c) AssertionError |
| (d) SQLException | (e) IOException | |

28) Which of the following is/are the valid wrapper class(es) allowed in Java Programming language?

- | | | |
|---------------|----------|-------------|
| (a) Character | (b) char | (c) Boolean |
| (d) Integer | (e) int | |

29) Consider the following object instantiation noting **blank1**, **blank2**, **blank3** and **blank4**.

```
TwoGen<blank1, blank2> tgObj =  
new TwoGen<blank3, blank4>(88, "Generics");
```

Which of the following is/are the valid option(s) to fill the blanks?

- | | | | |
|----------------------|--------------------|------------------|------------------|
| (a) blank1 → int | blank2 → Character | blank3 → float | blank4 → float |
| (b) blank1 → int, | blank2 → int | blank3 → int | blank4 → int |
| (c) blank1 → Integer | blank2 → String | blank3 → Integer | blank4 → String |
| (d) blank1 → String | blank2 → Boolean | blank3 → int, | blank4 → int |
| (e) blank1 → float | blank2 → Boolean | blank3 → float | blank4 → Boolean |

30) Which of the following is/are the valid collection interface(es) allowed in Java programming language?

- | | | |
|-----------|---------------|----------|
| (a) Queue | (b) SortedSet | (c) List |
| (d) Set | (e) Scanner | |

31) Which of the following is/are the valid **abstract** class(es) which come(s) under character input output operations in Java.

(a) Reader	(b) FileReader	(c) FileWriter
(d) InputStream	(e) Writer	

32) Consider the following segment of HTML code noting the **blank1** and **blank2**.

```
<applet code = blank1 width = 300 height = blank2>
</applet>
```

One has written an Applet code and saved the file in the following way:

Animation.java

Which of the following is/are the valid option(s) to fill the blanks in order execute the Applet by calling the *AppletViewer*.

(a) blank1 → Animation.java	blank2 → Animation.class
(b) blank1 → "Animation.class"	blank2 → 500
(c) blank1 → java	blank2 → class
(d) blank1 → Animation.java	blank2 → "Animation.class"
(e) blank1 → "Animation.class"	blank2 → 300

33) Which of the following is/are the valid **MouseListener** interfaces allowed in Java?

(a) void mouseClicked(MouseEvent me)
(b) void mouseEntered(MouseEvent me)
(c) void mouseExited(MouseEvent me)
(d) void mousePressed(MouseEvent me)
(e) void mouseReleased(MouseEvent me)

34) Which of the following is the valid constant value representing the **MAX_PRIORITY** class property in the **Thread** class?

(a) 5	(b) 1	(c) 10
(d) 100	(e) infinity	

No.	Statements and expressions
13	<code>int largest=array1[0];</code>
14	<code>System.out.println(array2[k]);</code>
15	<code>for(int k=0;k<=array2.length-1;k++)</code>
16	<code>array2[j]=array1[k];</code>
17	<code>for(int j=0,k=4;j<=array1.length-1 & k>=0;j++,k--)</code>
18	<code>int array2[]=new int[5];</code>
19	<code>int array1[]={1,13,4,7,10};</code>
20	<code>System.out.print(array1[k]+" ");</code>
21	<code>for(int j=0;j<array1[k];j++)</code>
22	<code>System.out.print(" *");</code>
23	<code>System.out.println();</code>
24	<code>System.out.print();</code>
25	<code>System.out.println(null);</code>
26	<code>int largest=array1;</code>
27	<code>int array2[]=int[5];</code>
28	<code>for(int j=0;j>array1[k];j++)</code>
29	<code>average=array1.length;</code>

37) Problem:

Write a Java program to initialize an Array with the following numbers and print the given numbers in reverse order on the console.

1	13	4	7	10
---	----	---	---	----

Solution:

```
public class Ex37{
public static void main(String[] args) {
```

(a) 1,3,7,6,5,4,7,7,2	(b) 19,18,17,16,15,14	(c) 18,17,16,15,14,12
(d) 19,11,18,17,16,15,14,12	(e) 1,3,7,6,5,4,2	

```
    }
}
```

38) Problem:

Write a Java program to initialize an Array with the following numbers and find the maximum value of the given numbers.

1	13	4	7	10
---	----	---	---	----

Solution:

```
public class Ex38{
public static void main(String[] args) {
```

(a) 1,3,2,1,10,9,25	(b) 18,19,17,16,13,12,11,10,9	(c) 19,13,12,25,11,10,9,8,7
(d) 19,13,12,11,10,9	(e) 19,1,13,12,11,25,10,9,2	

```
    }
}
```

39) **Problem:**

Write a Java program to initialize an Array with the following numbers and find the average value of the given numbers.

1	13	4	7	10
---	----	---	---	----

Solution:

```
public class Ex39{  
    public static void main(String[] args) {  
        (a) 19,18,12,7,6,5  
        (b) 19,8,3,7,6,5  
        (c) 19,8,12,7,6,5  
        (d) 1,19,8,2,2,12,7,6,5  
        (e) 6,15,1,14,5,4,2  
    }  
}
```

40) **Problem:**

Write a Java program to perform the following tasks

1. Initialize an Array with the following numbers.

1	13	4	7	10
---	----	---	---	----

2. Represent the numbers in each and every cell as a series of asterix (*) print horizontally. At the beginning of each line, cell value should be displayed as follows.

```
1      *  
13     * * * * * * * * * * * * * * * *  
4      * * * * *  
7      * * * * * * *  
10     * * * * * * * * * *
```

Solution:

```
public class Ex40{  
    public static void main(String[] args) {  
        (a) 19,3,1,20,28,22,23,2  
        (b) 19,12,1,14,12,14,2,24,30  
        (c) 19,18,1,5,17,9,2,25,  
        (d) 19,3,1,20,21,22,23,2  
        (e) 19,12,1,14,12,14,2,24,  
    }  
}
```
