



**UCSC**

**University of Colombo, Sri Lanka**

*University of Colombo School of Computing*



**DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY  
(EXTERNAL)**

Academic Year 2023— 1<sup>st</sup> Year Examination — Semester 1

**IT1406 — Introduction to Programming**

*Multiple Choice Question Paper*  
(2 Hours)

**Important Instructions**

- The duration of the paper is **2 Hours**.
- The medium of instructions and questions is English.
- This paper has **40 questions** on **12 pages**. Answer **all** questions.
- All questions are of the **MCQ** (Multiple Choice Questions) type.
- Each question will have **5 (five)** choices with **ONLY ONE** correct answer.
- This paper consists of 100 marks and all the questions will carry equal marks.
- Answers should be marked on the **special answer sheet** provided.
- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator 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.**
- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, is not allowed.
- Calculators are **not** allowed.
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1). Which of the following is correct regarding the *Java programming language*?

- a). It derives its syntax from the C language.
- b). It is a platform-specific programming language.
- c). The output of a Java compiler is an executable code.
- d). A Java applet is a small program that executes on the server.
- e). Characters of Java are inherited from the Python programming language

2). Which of the following indicates the correct statement regarding the *top-down development process*?

- a). Modular design is connected directly to top-down development.
- b). Data-driven programming is based on a structured, top-down approach.
- c). It starts with low-level modules and progressively forms a high-level system.
- d). Testing and debugging are typically delayed until the entire system is implemented.
- e). Detailed implementation of individual functions begins without considering the overall system design.

3). Which of the following statement(s) is/are correct regarding *type conversion* in Java programming?

- (I) Int can be assigned to a byte by casting the target type to a byte.
- (II) There are automatic conversions from the numeric types to Boolean.
- (III) Automatic type conversion will occur if the destination type is larger than the source type.

- |                    |                        |                   |
|--------------------|------------------------|-------------------|
| a). I only         | b). III only           | c). I and II only |
| d). I and III only | e). All I, II, and III |                   |

4). Which of the following can be a valid Identifier in Java?

- |                 |                |                |
|-----------------|----------------|----------------|
| a). class name  | b). 9className | c). class-name |
| d). _className@ | e). class_name |                |

5). If `int a=2` and `int b=3` are in a Java program, what would be the values of `a&b` and `a|b` respectively?

- |         |         |         |
|---------|---------|---------|
| a). 1,0 | b). 0,1 | c). 1,1 |
| d). 2,3 | e). 3,2 |         |

6). Consider the following code written in Java.

```

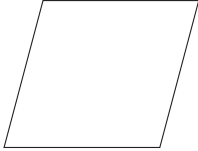
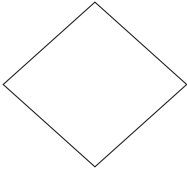

1 public class stringOut {
2     public static void main(String[] args) {
3         String str = "Hello-world!";
4         int a = str.lastIndexOf("o");
5         System.out.println(a);}}

```

Which one of the following indicates the correct output of the above code?

- |       |       |       |
|-------|-------|-------|
| a). 4 | b). 5 | c). 7 |
| d). 8 | e). 9 |       |

7). Match each *flowchart symbols* with the correct description

Test Type	Description
I) - 	A - Represents a decision point where a question is asked, and the flow of the chart follows different paths based on the answer.
II) - 	B - Represents an input or output process in an algorithm.
III) - 	C - Represents the starting or stopping point in the logic.

- |                            |                            |                            |
|----------------------------|----------------------------|----------------------------|
| a). I → A, II → C, III → B | b). I → B, II → C, III → A | c). I → C, II → B, III → A |
| d). I → B, II → A, III → C | e). I → C, II → A, III → B |                            |

8). Which of the following statement(s) is/are correct regarding the repetition control structure?

- (I) The DO WHILE loop is an example of a leading decision loop.
- (II) The REPEAT... UNTIL structure is a trailing decision loop.
- (III) Counted repetition occurs when the exact number of loop iterations is known in advance.

- |                     |                        |                    |
|---------------------|------------------------|--------------------|
| a). I only          | b). II only            | c). I and III only |
| d). II and III only | e). All I, II, and III |                    |

9). Consider the following code written in Java.

```
1 public class Calc2 {  
2     public static void main( String [] args ) {  
3         char ch1 = '1';  
4         ++ch1;  
5         System.out.println ( ch1+=3); } }
```

Which one of the following indicates the correct output of the above code?

- |                    |                   |       |
|--------------------|-------------------|-------|
| a). 11111          | b). 14            | c). 5 |
| d). Compiler error | e). Runtime error |       |

10). \_\_\_\_\_ is used to destroy unused objects and their memory is released for later reallocation in Java.

- |                             |                        |                   |
|-----------------------------|------------------------|-------------------|
| a). Memory.release() method | b). Delete operator    | c). Free() method |
| d). Garbage collection      | e). Disposal mechanism |                   |

11). Consider the following piece of code written in Java.

```
1 int [] numbers = {1, 2, 3, 4, 5};  
2 for (int i = 0; i < numbers.length; i++) {  
3     numbers[i] += 3;  
4 System.out.println ( numbers [2] );
```

Which one of the following indicates the correct output of the above code segment?

- |       |       |       |
|-------|-------|-------|
| a). 2 | b). 3 | c). 4 |
| d). 5 | e). 6 |       |

12). Consider the following code which is written in Java.

```
1 public class Sample {  
2     public static void main(String[] args) {  
3         int x = 15, y = 4;  
4         float z = (float) (x / y) * 2;  
5         System.out.print(z);}}
```

Which one of the following shows the output of the above code?

- |       |         |       |
|-------|---------|-------|
| a). 8 | b). 8.0 | c). 9 |
| d). 6 | e). 6.0 |       |

13). Consider the following code written in Java.

```
1 public class Example {  
2     public static void main(String[] args) {  
3         int sum = 0;  
4         for (int i = 0; i <= 10; i++) {  
5             if (i % 3 == 0)  
6                 continue;  
7             sum = sum + i;  
8             if (sum > 15) {  
9                 break;}}  
10        System.out.println(sum);}}
```

Which one of the following indicates the correct output of the above code?

- |        |        |        |
|--------|--------|--------|
| a). 15 | b). 16 | c). 18 |
| d). 19 | e). 55 |        |

14). Consider the following code written in Java.

```
1 public class CharApp {  
2     public static void main(String[] args) {  
3         int a = 7;  
4         int b = 2;  
5         a %= 5;  
6         a = (a>b) ? 1 : 0;  
7         System.out.println(a);}}
```

Which one of the following indicates the correct output of the above code?

- |       |       |       |
|-------|-------|-------|
| a). 0 | b). 1 | c). 2 |
| d). 5 | e). 7 |       |

15). Consider the following code written in Java.

```
1 public class SimpleCalc {
2     public static void main(String[] args) {
3         int a = 1;
4         switch (a) {
5             case 2:
6                 System.out.print("A ");
7                 break;
8             case 1:
9                 System.out.print("B ");
10            default:
11                System.out.print("C ");}}}
```

Which one of the following indicates the correct output of the above code?

- |         |                    |       |
|---------|--------------------|-------|
| a). A   | b). A B            | c). B |
| d). B C | e). Compiler error |       |

16). Consider the following code segment written in Java.

```
1     byte b = 42;
2     char c = 'a';
3     double d = 100.1234;
4     --- (A) --- result = (c * b);
5     System.out.println((c * b) );
```

Which should be the most suitable data type for (A)?

- |           |          |         |
|-----------|----------|---------|
| a). byte  | b). char | c). int |
| d). short | e). long |         |

17). Which of the following is NOT a basic *object-oriented programming* concept facilitates in Java?

- |                   |                            |                 |
|-------------------|----------------------------|-----------------|
| a). Encapsulation | b). Inheritance            | c). Abstraction |
| d). Polymorphism  | e). Functional programming |                 |

18). \_\_\_\_\_ indicates how closely the elements or statements of a module are associated with each other.

- |                 |              |             |
|-----------------|--------------|-------------|
| a). Decoupling  | b). Coupling | c). Binding |
| d). Abstraction | e). Cohesion |             |

19). Consider the following code piece written in Java.

```
1 public class CharApp {
2     public static void main( String [] args ) {
3         int [][][] x = {
4             {{1, 2}, {3, 4}},
5             {{5, 6}, {7, 8}}
6         };
7         System.out.print(x[0][1][0]);}}
```

Which one of the following indicates the correct output of the above code segment?

- |       |       |       |
|-------|-------|-------|
| a). 1 | b). 3 | c). 4 |
| d). 5 | e). 8 |       |

20). What is the most suitable response that represents, the '*this*' Keyword in Java?

- |  |
|--|
| a). Refers to an external object in the same package.                    |
| b). Represents the return value of a method.                             |
| c). Use the inside of any method to refer to the current class.          |
| d). Always a reference to the state on which the method was invoked.     |
| e). Use as a reference to an object of the current 'class' is permitted. |

21). Consider the following two classes defined in Java.

```
1 class Car {
2     String color;
3     void start() {
4         System.out.println("Starting the car.");}}
5 public class CarObject{
6     public static void main( String args []) {
7         Car myCar = new Car();
8         myCar.color = "Blue";
9         myCar.start();}}
```

Which one of the following indicates *a method, an object and a state* of the above code segment?

- |   |
|---|
| a). method: Car(); object: CarObject; state: "Blue" |
| b). method: start(); object: myCar; state: color    |
| c). method: Car(); object: CarObject; state: "Blue" |
| d). method: start(); object: myCar; state: "Blue"   |
| e). method: Car(); object: myCar; state: color      |

22). To disallow a method from being overridden, \_\_\_\_\_ can be used as a modifier at the start of its declaration.

- |               |              |           |
|---------------|--------------|-----------|
| a). void      | b). abstract | c). final |
| d). protected | e). public   |           |

23). Which of the following statement(s) is/are correct regarding **Method Overloading**?

- (I) Overloaded methods can have different access modifiers.
- (II) Overloading methods require all methods to have the same return type.
- (III) It allows a class to have multiple methods with the same name but different parameters.

- |                     |                        |                    |
|---------------------|------------------------|--------------------|
| a). I only          | b). I and II only      | c). I and III only |
| d). II and III only | e). All I, II, and III |                    |

24). Which of the following statement(s) is/are correct regarding **Encapsulation**?

- (I) It requires all methods to be declared as static.
- (II) It binds together code and the data and restricts outside interference.
- (III) It promotes modularity by exposing some of the implementation details.

- |                     |                        |                    |
|---------------------|------------------------|--------------------|
| a). I only          | b). II only            | c). I and III only |
| d). II and III only | e). All I, II, and III |                    |

25). Consider the following code piece written in Java.

```
1      public static void main(String [] args) throws Exception {
2          int [] numbers = {1, 2, 3};
3          try {
4              int result = numbers[2];
5              System.out.print("A");
6          } catch (Exception e) {
7              System.out.print("B");
8          } finally {
9              System.out.print("C");}}
```

Which one of the following indicates the correct output of the above code segment?

- |        |         |        |
|--------|---------|--------|
| a). A  | b). AB  | c). AC |
| d). BC | e). ABC |        |



26). Which one of the following does NOT indicate *type wrappers* in Java?

- |               |             |           |
|---------------|-------------|-----------|
| a). Character | b). Long    | c). Float |
| d). boolean   | e). Integer |           |

27). In Java, the exception type automatically defined for the programs to detect errors like division by zero is \_\_\_\_\_.

- |                          |                         |                    |
|--------------------------|-------------------------|--------------------|
| a). NullPointerException | b). ArithmeticException | c). ParseException |
| d). SocketException      | e). ClassCastException  |                    |

28). Which of the following statement(s) is/are correct regarding *Strings* in Java?

- (I) String is a primitive data type in Java.
- (II) String represents fixed-length, mutable character sequences.
- (III) StringBuffer represents growable and writable character sequences.

- |                     |                        |                   |
|---------------------|------------------------|-------------------|
| a). I only          | b). III only           | c). I and II only |
| d). II and III only | e). All I, II, and III |                   |

29). Consider the following code segment written in Java.

```
1      int numerator = 10;  
2      int denominator = 0;  
3      int result = numerator / denominator;  
4      int[] numbers = {1, 2, 3};  
5      int index = 5;  
6      int value = numbers[index];
```

Which of the following *exceptions type(s)* needed to be checked in the above code?

- (I) NullPointerException
- (II) ArrayIndexOutOfBoundsException
- (III) ArithmeticException

- |                    |                     |              |
|--------------------|---------------------|--------------|
| a). I only         | b). II only         | c). III only |
| d). I and III only | e). II and III only |              |

30). \_\_\_\_\_ method can be used to extract a single character from a String.

- |                 |                 |                    |
|-----------------|-----------------|--------------------|
| a). getChars( ) | b). getBytes( ) | c). toCharArray( ) |
| d). charAt( )   | e). toString( ) |                    |

31). Which of the following statement(s) is/are correct regarding the *enumeration* in Java?

- (I) It is a list of named constants.
- (II) It can have constructors, methods, and instance variables.
- (III) It can be used in classes rather than limiting to a variable.

- |                     |                        |                    |
|---------------------|------------------------|--------------------|
| a). I only          | b). II only            | c). I and III only |
| d). II and III only | e). All I, II, and III |                    |

32). Select the most suitable options for filling the blanks in the following statements.

- (I) \_\_\_\_\_X\_\_\_\_\_ helps to embed supplemental information into a source file .
- (II) \_\_\_\_\_Y\_\_\_\_\_ are classes that encapsulate a primitive type within an object.
- (III) \_\_\_\_\_Z\_\_\_\_\_ is the process by which a primitive type is automatically encapsulated into its equivalent type wrapper whenever an object of that type is needed.

- |  |
|--|
| a). X - Annotations, Y - Autoboxing, Z - Type wrappers |
| b). X - Annotations, Y - Type wrappers, Z - Autoboxing |
| c). X - Autoboxing, Y - Type wrappers, Z - Annotations |
| d). X - Type wrappers, Y - Autoboxing, Z - Annotations |
| e). X - Type wrappers, Y - Annotations, Z - Autoboxing |

33). Which of the following indicates the correct statements regarding *packages* in Java?

- |   |
|---|
| a). Packages are containers for static classes.                               |
| b). When creating new class definitions packages will be automatically added. |
| c). It is a data storage mechanism that facilitates code reuse.               |
| d). There can be classes not accessible by code outside of that package.      |
| e). Java does not support creating a hierarchy of packages.                   |

34). Consider the following two classes defined in Java.

```
1 class Shape {
2     void draw() {
3         System.out.println("Drawing a shape");}}
4 class Circle extends Shape {
5     void draw() {
6         --- (A) ---
7         System.out.println("Drawing a circle");}}
```

To access the superclass version of the draw() method, which one of the following lines needs to be added to the given space(mentioned as (A) )?"

- |                       |                   |                    |
|-----------------------|-------------------|--------------------|
| a). Shape.draw();     | b). super.draw(); | c). Circle.draw(); |
| d). myDrawing.draw(); | e). draw.draw();  |                    |

35). Consider the following code written in Java.

```
1 public class HelloApp {
2     static String Sample(String[] values) {
3         StringBuilder result = new StringBuilder();
4         for (int i = 0; i < values.length; i += 2) {
5             result.append(values[i]);
6         }
7         return result.toString();
8     }
9     public static void main(String[] args) {
10        String[] A = {"A", "B", "C", "D", "E"};
11        String result = Sample(A);
12        System.out.println(result);
13    }
```

Which one of the following is correct regarding the output of the above code?

- |           |                    |         |
|-----------|--------------------|---------|
| a). ABCDE | b). BD             | c). ACE |
| d). CDEFG | e). Compiler error |         |

36). Which of the following statement(s) is/are correct regarding **Scanner class** in Java?

- (I) It is used for formatting output in Java applications
- (II) It reads formatted input and converts it into its binary form.
- (III) It can be used to read input from any source that implements the Readable interface.

- |                     |                        |                    |
|---------------------|------------------------|--------------------|
| a). I only          | b). III only           | c). I and III only |
| d). II and III only | e). All I, II, and III |                    |

37). Which of the following statement(s) is/are correct regarding **access modifiers** in Java?

- (I) Classes or interfaces declared as **public** can be accessed from any other class.
- (II) The **protected** allows access within its subclasses, and classes within the same package.
- (III) The **private** access modifier restricts the access of a class method only to the class in which it is declared.

- |                     |                        |                   |
|---------------------|------------------------|-------------------|
| a). I only          | b). II only            | c). I and II only |
| d). II and III only | e). All I, II, and III |                   |

38). Which of the following statement(s) is/are correct regarding **design concepts** in Java?

- (I) The procedure-driven approach considers the processes of a program.
- (II) The data-driven approach to program design is based on the data in a program more on the processes.
- (III) In the procedure-driven approach, the actual structure of the data can be seen before all the high-level processes are defined.

- |                     |                        |                   |
|---------------------|------------------------|-------------------|
| a). I only          | b). III only           | c). I and II only |
| d). II and III only | e). All I, II, and III |                   |

39). Which one of the following statement(s) is/are correct regarding **multithreaded programming**.

- |   |
|---|
| a). It supports the main loop/polling mechanism.  |
| b). A thread's priority can only be set once and cannot change dynamically.                   |
| c). Thread-local variables are shared among all threads and have the same value in each.      |
| d). Thread priority in Java is a reliable mechanism to control the order of thread execution. |
| e). Single-threaded programs must wait for each task to end before starting the next.         |

40). Which of the following statement(s) is/are correct regarding **JAVA Database Connectivity(JDBC)**?

- (I) It is primarily used for connecting Java applications to NoSQL databases.
- (II) JDBC uses SQL (Structured Query Language) for interacting with databases.
- (III) JDBC is a database management system that is used to interact with relational databases.

- |                     |                        |                   |
|---------------------|------------------------|-------------------|
| a). I only          | b). II only            | c). I and II only |
| d). II and III only | e). All I, II, and III |                   |

\_\_\_\_\_ \*\*\*\*\* \_\_\_\_\_