

[This question paper contains *two* printed pages]

BSc(IT)/2020/I/F/ITP102/I

Student No:

Semester End Examination, Spring 2021
Royal University of Bhutan
Gyalpozhing College of Information Technology
BSc in Information Technology - Year I, Semester I
ITP102 : Object Oriented Programming Fundamentals

Time: 3 Hours

Max. Marks: 50

Write your Student number on the top immediately on receipt of this question paper. All questions are compulsory, and marks are given at the end of each question. Parts of a question should be answered together. Spend the first 10 minutes in reading the questions.

PART - A [5 Marks]

Answer all the questions

Multiple Choice Questions

[5 x 1 = 5]

Q1) What are the relationships between the below-mentioned classes?

Vehicle, Suzuki, Hyundai

- A. All three are super classes
- B. All three are sub classes
- C. Suzuki is the super class, Vehicle and Hyundai are the subclass of Suzuki
- D. Vehicle is the super class, Suzuki and Hyundai are the sub class of Vehicle

Q2) How would you declare a variable storing average grade?

- A. `double grade = "30.0";`
- B. `double grade = 30.0;`
- C. `int grade = "30.0";`
- D. `int grade = 30.0;`

Q3) What value is placed in x?

`x = 60 > 100 ? 0 : 1;`

- A. 0
- B. 100
- C. 1
- D. 60

Q4) What is the output of the given code?

```
1         class Output{
2             public static void main(String[] args) {
3                 int a = 1;
4                 int b = 2;
5                 int c; int d;
6                 c = ++b;
7                 d = a++;
```

```

8          c++;
9          b++;
10         ++a;
11         System.out.println(a + " " + " " + b + " " + c);
12     }
13 }

```

- A. 3 4 4
- B. 3 2 2
- C. 2 4 4
- D. 4 4 4

Q5) In character stream I/O, a single read/write operation performs

- A. Two bytes read/write at a time.
- B. Eight bytes read/write at a time.
- C. One byte read/write at a time.
- D. Five bytes read/ write at a time.

PART - B [15 Marks]
SHORT ANSWER QUESTION
Answer all the questions

- Q1)** What is Error in Java. Give Example **[1.5]**
- Q2)** List with example, the methods to print the exception Messages. **[3]**
- Q3)** Write one difference between Testing Debugging. **[1]**
- Q4)** When do we use **this** and **super** keyword in java. Explain with code snippet. **[2]**
- Q5)** Write down three differences between abstract class and interface. **[3]**
- Q6)** What is Encapsulation in Java. Explain how Java achieves Encapsulation Principle. **[1.5]**
- Q7)** What is Command Line Argument. **[0.5]**
- Q8)** Draw the Java Architecture diagram. **[1.5]**

PART - III [25 Marks]
LONG ANSWER QUESTIONS
Answer all the questions

Q1) Create a custom exception called **MyException** and use **MyException** in a class **MyException1** and print the exception. Remember, your customException should have toString() method. **[5]**

Q2) Finding, **a** power **b**. Write a java program that calculates **a** power **b**. The **a** can be either int or float. The **b** can only be an int. Use constructor overloading and method overloading to calculate **power (a, b)**.

Example Input and Output:

power(2.5, 2) -> 6.25

power(25, 2) -> 625

Note: Do not use inbuilt function pow.

[5]

Q3) **ListADT** has the following methods.

Methods:

(a) **ListADT()**: Constructor

(b) **add(element)**: Takes an int element to add into Array. The return type is void.

(c) **contains(element)**: Takes an int element and returns whether it is present in the Array or not. The return type is boolean.

(d) **get(index)**: Takes an int index and returns the element of that index. The return type is int.

(e) **size()**: Returns the size of Array. The return type is int.

(f) **toString()**: Converts the given input into the String format

Design an interface where this can be used for various applications and create a class **ListADTClass** which implements this interface. **[10]**

Q4) Create a class **OpenFileExample** to implement opening and reading a file using **FileReader** class. Do not forget to handle exception. Assume your own location of file in the computer. **[5]**

----- *BEST WISHES* -----