



B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Third Semester

COMPUTER SCIENCE AND ENGINEERING

U18CSI3202: Object Oriented Programming

COURSE OUTCOMES

CO1: Analyze a problem and identify classes, objects, and the relationships among them.(K4,S3)

CO2: Develop applications using various types of Inheritance and Interfaces(K3,S2)

CO3: Develop applications or programs using exception handling and multithreading. (K3,S2)

CO4: Analyze an application and make use of object-oriented concepts for its implementation. (K4,S3)

CO5: Develop programs using collections, files and streams in java.(K3,S2)

Time: Three Hours

Maximum Marks: 100

**Answer all the Questions:-
PART A (10 x 1 = 10 Marks)**

1. Match the List –I with List-II

COL [K_L]

List I	List II
A. Runnable	i. Refers current object
B. Thread	ii. Interface
C. this	iii. Refers base class variables
D.super	iv. Class

- | | A | B | C | D |
|----|-----|----|-----|-----|
| a) | ii | i | iii | iv |
| b) | iii | iv | ii | i |
| c) | ii | iv | i | iii |
| d) | iii | i | ii | iv |

2. Which of the following is correct way of implementing an interface salary by class manager? COL [K_L]

- | | |
|-------------------------------------|--|
| a) class Manager extends salary { } | b) class Manager implements salary { } |
| c) class Manager imports salary { } | d) class Manager import salary { } |

3. Which of the following statements are true in java? COL [K_L]

- I. Method overloading is done at compile time.
- II. Protected members are accessible to the member of derived class.

III. A derived class inherits constructors and methods.

IV. An Interface can have final and non final methods

- a) I,II
- b) II, III,IV
- c) III,I,II
- d) I,II,IV

4. Find the output of following code COL [K_L]

```
class Test {  
    public static void main(String args[]) {  
        System.out.println(10 + 20 + "Addition");  
        System.out.println("Addition" + 10 + 20);  
    }  
}
```

- a) 30Addition
- b) 1020Addition
- c) 1020Addition
- d) 30Addition
- Addition30
- Addition1020

5. Assertion (A): The capability of a class to derive properties and characteristics from another class is called Inheritance. COL [K_L]

Reason (R): Deriving a class from more than one base classes is called hierarchical inheritance

- a) Both A and R are Individually true and R is the correct explanation of A
- b) Both A and R are Individually true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true

6. What is the output of this program? COL [K_L]

```
class Output {  
    public static void main(String[] args) {  
        String s1 = new String("Kumaraguru");  
        String s2 = new String(s1);  
        System.out.println((s1==s2) + " " + s1.equals(s2));  
    }  
}
```

- a) true true
- b) false false
- c) true false
- d) false true

7. Arrange the following thread states in thread life cycle of java COL [K_L]

- 1. Runnable
- 2. Terminate

Please indicate knowledge level (K₁toK₆) and Course Outcome level (CO1 to CO5) against each question for each subdivision.

3. Running

4. New

- a) 2-3-4-1
- b) 1-3-2-4
- c) 3-4-2-1
- d) 4-1-3-2

8. What will be the output of the following Java program?

COL [K_L]

```
import java.util.*;
class Arraylist
{
    public static void main(String args[])
    {
        ArrayList obj = new ArrayList();
        obj.add("A");
        obj.add("D");
        obj.add("C");
        obj.add(2, "E");
        System.out.println(obj);
    }
}
```

- a) [A, B, C, D]
- b) [A, D, B, C]
- c) [A, E, D, C]
- d) [A, D, E, C]

9. Assertion (A): Exception handling in java is one of the powerful mechanisms to handle the runtime errors. COL [K_L]

Reason (R): java.lang package contain all the Java's built in exceptions

- a) Both A and R are Individually true and R is the correct explanation of A
- b) Both A and R are Individually true but R is not the correct explanation of A
- c) A is true but R is false
- d) A is false but R is true

10. What is the output of this program if input given is 'abcqfghqbcd'?

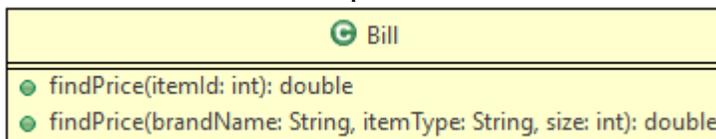
COL [K_L]

```
class InputOutputOperations {
    public static void main(String args[]) throws IOException {
        char c;
        BufferedReader obj = new BufferedReader(new InputStreamReader(System.in));
```

Please indicate knowledge level (K₁toK₆) and Course Outcome level (CO1 to CO5) against each question for each subdivision.

**Answer any FIVE Questions:-
PART C (5 x 14 = 70 Marks)
(Answer not more than 350 words)**

21. a) Explain object oriented programming concepts supported in java with examples. 7 COL [K_L]
 b) There are many customers who visit the retail shop to purchase various items. 7 COL [K_L]
 The manager of the retail shop now wants to keep track of all its customers' data. Let us assume that customer details include Customer ID and Telephone Number. Develop a java code to maintain and display customer details.
22. a) Explain types of constructors with examples 7 COL [K_L]
 b) Consider the following scenario in the ERP system and implement it using appropriate object oriented concept. Create a class person with name, age, address, city, country as attributes and a method to get details about the person. Derive sub class student with attributes college name, course, duration of course and year of completing the course and a method to display name of students who completes courses in same year. Derive undergraduate student class from base class student and calculate grade points of students. 7 COL [K_L]
23. a) Explain the keywords used in Exception Handling and types of exceptions with examples 7 COL [K_L]
 b) Create an interface, "PrimeTester", that has a method boolean isPrime(int n). When the method is called, the implementing class should determine if the given "n" is prime or not. 7 COL [K_L]
24. a) Explain life cycle of multithreading and inter thread communication with an example 7 COL [K_L]
 b) A cloth store wants to keep track of price of each item in the store and implements a class Bill based on class diagram and description given below. The Bill class is used to find the price of items for calculation. 7 COL [K_L]



The details of the item are given below

Please indicate knowledge level (K₁toK₆) and Course Outcome level (CO1 to CO5) against each question for each subdivision.

Brand Name	Item Id	Item Type	Size	Price(in Rs)
Puma	1001	T-Shirt	34	1500
			36	
	1002	Skirt	38	1000
			40	
Reebok	1003	T-shirt	34	1250
			36	
	1004	Skirt	38	750
			40	

Method Description

findPrice(int itemId)

- (i) Find and return the price based on the itemId using the table given above
- (ii) If the itemId passed to method is invalid, return the price as 0.

findPrice(String brandName, String itemType, int size)

- (i) Find and return the price based on the brandName, itemType and size using the table given above.
- (ii) If any invalid details are passed to the method, return the price as 0

25. a) Develop a java program to swap two elements in ArrayList 7 COL [K_L]
- b) Write a program that repeatedly asks the user for a proposed password until the user enters an acceptable password. When the user enters an acceptable password, the program writes a message and exits. 7 COL [K_L]
- Acceptable passwords:
1. Are at least 7 characters long.
 2. Contain both upper and lower case alphabetic characters.
 3. Contain at least 1 digit.
26. a) Explain FileInputStream and FileOutputStream with example 7 COL [K_L]

Please indicate knowledge level (K₁toK₆) and Course Outcome level (CO1 to CO5) against each question for each subdivision.

b) Write a Java program to concatenate the contents of two files and store it into another file. 7 COL [K_L]

Please indicate knowledge level (K₁toK₆) and Course Outcome level (CO1 to CO5) against each question for each subdivision.