

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-III EXAMINATION- 2022

B.Tech (Open Elective) Semester VII

COURSE CODE: 19B1WCI734

MAX. MARKS: 35

COURSE NAME: Object-Oriented Technologies using Java

COURSE CREDITS: 2

MAX. TIME: 2 Hours

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

1. Define a Java program to implement a Stack using Queues (CO-3) [6 marks]
2. Write a Java Program to find the addition of two Polynomials.(CO-3) [6 marks]
3. Create a class Student with attributes roll no, name, age and course. Initialize values through parameterized constructor. If age of student is not in between 15 and 21 then generate user-defined exception "AgeNotWithinRangeException". If name contains numbers or special symbols raise exception "NameNotValidException". Define the two exception classes. (CO-2) [6 marks]
4. Write a Java program which creates only one object. If user attempts to create second object, he should not be able to create it (Using Exception Handling). (CO-2) [5 marks]
5. You have to write a Java program which first generates a set of random numbers and then determines negative, positive even, positive odd numbers *concurrently*. (CO-4)[6 marks]  
To generate a random number, one can use Random class of java.util package as given below:

```
import java.util.Random;
Random random = new Random();
int x = random.nextInt(1000); // Generates random integer 0 to 999
```
6. Answer the following in 2-4 statements with reason(s) [3×2= 6 marks]
  - What are the different ways to handle exceptions? (CO-2)
  - Can we have the try block without catch block? (CO-2)
  - When should I use abstract classes and when should I use interfaces? (CO-2)