



R20 Regulation *Subject code: 3P3HA*
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, July 2024

**Introduction to Object Oriented Programming and Data Structures using JAVA
(CSE(DS))**

Maximum Marks: 70

Date:18.07.2024 Duration: 3 hours

- Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	Bloom Tx
1	What is Object Oriented Programming? How it is different from Procedural concepts?	1	L1
2	How to declare and initialize variables in java.	1	L1
3	when do we declare a class or method final?	2	L1
4	what is meant by interface?	2	L1
5	Write the usage of try and catch.	3	L1
6	What are the types of test cases in Recursion and define.	3	L1
7	Differentiate sorting and searching.	4	L1
8	When singly linked list can be represented as circular linkedlist?	4	L1
9	List out applications of Stack.	5	L1
10	How many ways List can be implemented and mention the syntax.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	a) "Java is called Machine Independent language" - Justify this statement with proper explanation. (5M) b) Write short note on the following Object-Oriented Concepts. (5M) i) Encapsulation ii) Polymorphism with example	1	L2
OR			
12	a) Briefly explain about various Stream Classes in JAVA. (5M) b) Write a JAVA program to read a character from user by using Buffered Reader class. (5M)	1	L2
13	a) How do we implement static polymorphism in JAVA? Explain briefly. (5M) b) How does polymorphism promote extensibility? Explain with example(5M)	2	L2
OR			
14	Write a program to demonstrate the following a) hierarchical and b) Multiple inheritance using interfaces (5M+5M)	2	L2

15	a) Write a JAVA program for Binary Search using Recursion. (5M) b) Write about try, catch, finally with examples. (5M)	3	L2
	OR		
16	Illustrate different types of Exceptions in java? (10M)	3	L2
17	a) Define Sorting and types of sorting techniques. (5M) b) Explain Insertion Sort. Construct Insertion Sort for the initial key set 42, 23, 74, 11, 65, 58, 94, 36, 99, 87, 20. (5M)	4	L2
	OR		
18	a) What is a circular linked list? What are the operations performed in circular linked list? Explain. (5M) b) Write and explain algorithm to insert element at the beginning of circular linked list. (5M)	4	L2
19	Explain the implementation of the Array List (bounded capacity) with Code Fragment. (10M)	5	L2
	OR		
20	What is Java Collections Framework? List out some benefits of Collections framework and explain. (10M)	5	L2