R22 Regulation *Subject code:4P5HB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech V Semester Supplementary Examinations, April 2026

DISTRIBUTED DATABASES

(CSE(DS))

Maximum Marks: 60 Date:24.04.2026 Duration: 3 hours

Note:
1. **This question paper contains two parts A and B.**
2. **Part A is compulsory which carries 10 marks. Answer all questions in Part A.**
3. **Part B consists of 5 Units. Answer any one full question from each unit.**
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 (10X1M=10 Marks)		Marks	CO	BTL
1.a)	List any two problem areas in distributed database systems.	1M	1	L1
b)	What is the role of allocation in distributed database design?	1M	1	L2
c)	What are the main layers of query processing in a distributed system?	1M	2	L2
d)	What is the purpose of distributed query optimization?	1M	2	L2
e)	What are time-stamp-based algorithms used for?	1M	3	L1
f)	Define deadlock in the context of transaction management.	1M	3	L1
g)	What is meant by network partitioning in distributed systems?	1M	4	L2
h)	Mention two advantage of parallel query processing.	1M	4	L2
i)	What is inheritance in an Object-Oriented Data Model?	1M	5	L1
j)	What is meant by persistent of objects?	1M	5	L2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Explain the promises and problem areas of Distributed Database Systems. b) Describe the architectural models of a Distributed DBMS with neat diagrams.	5M 5M	1	L2 L3
	OR			
3	a) Discuss various design strategies used in distributed database design. b) Explain fragmentation and allocation with suitable examples.	5M 5M	1	L3 L3
4	Describe in detail the steps involved in distributed query processing and illustrate query decomposition with an example.	10M	2	L3
	OR			
5	a) Compare centralized and distributed query optimization. b) Write short notes on any two distributed query optimization algorithms.	5M 5M	2	L4 L3

6	a) Explain the properties and types of transactions in a distributed environment. b) Illustrate serializability with an example of conflicting transactions.	5M 5M	3	L2 L3
	OR			
7	a) Explain deadlock management in distributed databases. b) Describe time-stamp-based and optimistic concurrency control algorithms.	5M 5M	3	L3 L3
8	a) Explain reliability concepts and measures used in DDBMS. b) Discuss local and distributed reliability protocols.	5M 5M	4	L2 L2
	OR			
9	a) Explain load balancing and parallel query processing mechanisms. b) Describe various parallel database architectures.	5M 5M	4	L3 L2
10	What do you mean by an object in Object-Oriented Database? Explain with a simple example like a "Student" object having roll number and name.	10M	5	L3
	OR			
11	a) Compare OODBMS and ORDBMS based on features and advantages. b) Write short notes on object query processing and object management architecture.	5M 5M	5	L4 L2