



R20 Regulation

Subject code: 3P3ED

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech III Semester Supplementary Examinations, February 2024

DATABASE MANAGEMENT SYSTEMS

(Common to CSE, CSE(AI&ML) & CSE(DS))

Maximum Marks: 70

Date: 23.02.2024 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.
 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	Differentiate DDL and DML	CO1	L2
2	What is logical data independence and why it is important?.	CO1	L1
3	How weak entities are represented in database?	CO2	L1
4	State about SELECT operation in Relational algebra.	CO2	L1
5	What are the steps involved in processing a query?	CO3	L1
6	Why NULL values are needed in databases?	CO3	L1
7	What is cancelled transaction?	CO4	L1
8	What is lock used for?	CO4	L1
9	What is tree indexing?	CO5	L1
10	Why is B+ tree efficient than B tree?	CO5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	(a)What are the main differences between a file processing system and a database management system? Describe the overall system architecture of a database system. Also show the connection system. Also show the connection amongst its various components. (b)Define View? Explain about how to create a view using a single table and multiple tables	5M 5M	CO1 L2 L1
OR			
12	(a) What are the responsibilities of a DBA? If we assume that the DBA is never interested in running his or her own queries, does the DBA still need to understand query optimization? Why? (b)Who were the different database users? Explain their interfaces to database management systems.	5M 5M	CO1 L2 L2
13	(a)How relational algebra is different from relational calculus.	5M	L2

	(b) Construct an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents	5M	CO2	L3
	OR			
14	(a) Draw an ER Diagram for BANK database schema with at least five entity types. Also specify Primary Key and Structural Constraints (b) Distinguish between ER model and relational model	5M 5M	CO2	L3 L2
15	(a) Consider the following relational database: Dept(Deptno, Dname, Location) Emp(Empno, Empname, Job, Salary, MGR, Hiredate, Deptno) Write SQL statements to the following queries. i) Find the details of employees who are managers. ii) Count the distinct salaries of the employees. iii) Find the department name of the employee: 'Scott'. iv) For each Job, list the number of employees in the company. v) Display the details of top three salaried employees (b) What is functional dependency? With respect to FD: i) Mention the conditions to be satisfied by sets of FDs to be minimal. ii) Write an algorithm to compute the attribute closure of attribute set X List the inference rules for FDs	5M 5M	CO3	L3 L2
	OR			
16	(a) "Redundancy is the back bone of reliability; therefore, a reliable database system should not attempt normalization beyond 3NF". Comment on the above statement. Give reason in support of or against the above statement (b) Suppose that we decompose the scheme $R=(A,B,C,D,E)$ into (A,B,C) and (A,D,E) . Show that this decomposition is a lossless join decomposition if the following functional dependencies hold: $A \rightarrow BC$, $CD \rightarrow E$, $B \rightarrow D$ Show that this decomposition is dependency preserving decomposition.	5M 5M	CO3	L3 L3
17	(a) How concurrency is performed? Explain the protocol that is used to maintain the concurrency concept. (b) Differentiate conflict serializability and view serializability with suitable example.	5M 5M	CO4	L2 L2
	OR			
18	(a) What is transaction in database? Discuss the property of transaction along with various states of transaction.	5M	CO4	L2

	(b) How do optimistic concurrency control techniques differ from other concurrency control techniques? Why they are also called validation or certificate techniques? Discuss the typical phases of an optimistic concurrency control method.	5M		L2
19	(a) What is an index? Discuss important properties of an index that affect the efficiency of searches using the index.	5M	CO5	L2
	(b) Compare and contrast extendable and linear hashing	5M		L2
	OR			
20	(a) Describe a B+ tree for the following set of key values: (2,3,5,7,11,17,19,23,29,31) Assume that the tree is initially empty and values are added in ascending order. Construct B+ tree for the case where the number of pointer that will fit in one node is six	5M	CO5	L3
	(b) Elaborate Indexed Sequential Access Method (ISAM) with neat diagrams	5M		L2

