

2024

Database Management Systems*Full Marks : 100*

Time : Three hours

*The figures in the margin indicate full marks for the questions.**Answer any five questions.*

1.	a)	What are the advantages of a DBMS over traditional file processing System?	8
	b)	What are the functions of a database administrator (DBA)?	8
	c)	What you mean by 2 tier and 3 tier client server architecture?	4
2.	a)	Explain the concepts of super key, candidate key and primary with example.	6
	b)	Explain the mapping cardinality constraints in ER model.	8
	c)	Differentiate between Strong and Weak entity set with example.	6
3.	a)	Explain following Relational algebra operations: Selection, Projection, Union, Cartesian product, Set difference and rename.	12
	b)	What are the symbols used to draw an E-R diagram?	8
4.		<p>Consider the following employee database where the primary keys are underlined. Give an expression in SQL for each of the following queries.</p> <p>Employee(<u>employee name</u>, street, city) Works(<u>employee name</u>, company_name, salary) Company(<u>company name</u>, city) Manages(<u>employee name</u>, manager_name)</p> <p>i. Find the name of all employees who earn salary greater than Rs. 80000 and less than Rs.90000 . ii. Find the company name which located either in city Mumbai or in New Delhi. iii. Find the employees who earn salary greater than average salary of all employees.</p>	20

		iv. Find the total number of rows in company table. v. Find all employees who work for "TCS" company.	
5.	a)	What is Normalization? Define 1NF, BCNF and 3NF.	10
	b)	What are the uses of functional dependencies?	5
	c)	What is attribute closure? What are the uses of it? What is canonical cover?	5
6	a)	What are the states of a transaction? Explain it.	5
	b)	What you mean by conflict and view serializability? Explain it.	5
	c)	What is a schedule? Explain two phase locking protocol. Explain Strict and Rigorous two phase locking protocol?	10
7.	a)	What is deadlock? What are the necessary condition for a deadlock situation? Explain deadlock prevention schemes?	10
	b)	Differentiate between following: i. SQL. DML and DDL statements in ii. participation. Total participation and partial iii. attributes. Single valued and multivalued	10