

K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

April – May 2023		B. Tech Program: EXTC Scheme II		Semester: VI
Examination: TY		and	Course Name: Database Management System	Max. Marks: 60
Course Code: EXDLC6054			Duration: 2.5 Hours	
Date of Exam: 22/05/2023				

Instructions:				
(1) All questions are compulsory.				
(2) Draw neat diagrams wherever applicable.				
(3) Assume suitable data, if necessary.				
Q. No	Statement	Max. Marks	CO	BT level
Q 1	Solve any six questions out of eight:	12		
i)	List advantages and applications of DBMS	02	CO1	U
ii)	List types of relationships in ER diagram with example	02	CO2	U
iii)	List and explain different Operators in SQL	02	CO3	U
iv)	List and explain Aggregate functions in SQL	02	CO4	U
v)	List and explain types of Outer Joins	02	CO5	U
vi)	List and explain the states in a transaction	02	CO6	R
vii)	Give comparison for Relational Algebra and Relational Calculus.	02	CO6	R
viii)	Explain Cross product	02	CO4	U
Q.2	Solve any four questions out of six.	16		
i)	Explain the difference between logical and physical data independence.	04	CO1	A
ii)	Write short note on primary key and foreign key with example.	04	CO2	R
iii)	In relation R(ABCDEF), functional dependencies are given, FD { $AB \rightarrow C$, $C \rightarrow D$, $C \rightarrow E$, $E \rightarrow F$, $F \rightarrow A$ }, What is the candidate key?	04	CO3	A
iv)	Write short note on: Security and Authorization in DBMS.	04	CO4	R
v)	Explain constraints in SQL.	08	CO5	A
vi)	Explain ACID properties in detail	04	CO6	R
Q.3	Solve any two questions out of three.	16		
i)	Explain in detail the overall architecture of DBMS with the diagram	08	CO1	U
ii)	Explain following relational algebra operations with suitable example: a) Cartesian product b) Outer join c) Generalized projection. d) Set difference e) Rename	08	CO4	A

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iii)	Shop has the following relations, Inventory (code, name, number of items) Person (ID, name, age) Is_member (code ID, Date of joining) Items (accession number, Serial number, Category, Size, price) Purchased_by (accession number, serial id, date of purchase) Answer the following queries in SQL: 1) List all the items purchased before 31 April 2023 and details of the Purchaser. 2) Find the details of Items and Customer/Purchaser who Purchased items above Rs. 10000 3) Give the details of unsold items of size above 20 inch. 4) List the frequencies purchasers/Customers who have purchased at least one item on every visit	08	CO5	A
Q.4	Solve any two questions out of three.	16		
i)	Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of various tests and examinations conducted.	08	CO2	Ap
ii)	Draw UML case diagram for exam conduction.	08	CO3	A
iii)	Define normalization? Explain 1NF, 2NF,3NF and BCNF with example.	08	CO6	A