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**Fourth Semester B.E./B.Tech. Degree Supplementary Examination,
June/July 2024**

Database Management System

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	What is DBMS? List the characteristics of database approach. Bring out major advantages of the database approach.	8	L2	CO1
	b.	Explain data independence. Draw 3 schema architecture and discuss the mapping.	7	L2	CO1
	c.	Define following : i) Database Administrator ii) Canned transaction iii) Weak entity iv) Meta data v) Database Instance.	5	L2	CO1
OR					
Q.2	a.	Describe components modules of DBMS and its interaction with neat diagram.	8	L2	CO1
	b.	Draw ER diagram of library database schema atleast 4 entities. Also specify primary keys, structural constraints and explain.	8	L3	CO2
	c.	Briefly discuss different types of end users of Database.	4	L2	CO2
Module – 2					
Q.3	a.	Briefly explain different types of update operation on relation database. Show an example of violation of referential and entity integrity in each of update operation.	10	L2	CO3
	b.	Consider following schema : Suppliers (SID , SName , address) Parts (PID , PName , Colour) Catalog (Sid , PID , Price) Write relational algebra expression for following queries : i) Find the names of all red parts. ii) Find all prices for parts that were red or green. iii) Find the SID's of all suppliers who supply part that is red or green. iv) Find the SID's of all supplier who supply part that is red and green.	10	L3	CO2
OR					
Q.4	a.	Describe the steps of ER – to – relational mapping with suitable examples and schema for each step.	10	L2	CO2
	b.	Explain with example : i) Division operation ii) Full outer join iii) Aggregate function iv) Project operation v) Cartesian product.	10	L2	CO2

Module – 3					
Q.5	a.	What is the need for normalization? Explain 2 nd normal form. Consider the relation EMP_PROJ = {SSn , Pnumber , Hours , Ename , Pname , Plocation}. Assume {SSn , Pnumber} as a primary key. The dependencies are SSn ; Pnumber → {Hours} SSn → {Ename} Pnumber → {Pname, Plocation} , Normalize above relation into 2NF.	10	L3	CO4
	b.	Illustrate the informal design guidelines for relation schemes with examples.	10	L2	CO4
OR					
Q.6	a.	Write syntax with example in SQL for the DDL and DML SQL statements.	10	L2	CO3
	b.	Consider the schema for college database. Student (USN , Sname , Address , Phone , Gender) SemSec (SSID , Sem , Sec) Class (USN , SSID) Subject (Subcode , Title , Sem , Credits) IAmarks (USN , Subcode , SSID , Test1 , Test2, Test3, Final IA) Write SQL Query. i) List all the students studying in 4 th sem 'C' section. ii) Compute total number of male students in each semester. iii) List Test1 marks of all students in all subjects.	10	L3	CO3
Module – 4					
Q.7	a.	How are triggers and assertion defined in SQL? Explain with example.	10	L2	CO4
	b.	Write the syntax and example of view in SQL. Explain efficient view implementation.	10	L2	CO4
OR					
Q.8	a.	List the problems that occur during concurrency control and also explain them with supporting transaction diagrams.	10	L2	CO5
	b.	Explain the various DBMS – Specific Buffer replacement policies.	10	L2	CO5
Module – 5					
Q.9	a.	Demonstrate with example deadlock in transaction. Discuss deadlock prevention algorithm.	10	L2	CO5
	b.	What are Binary locks? Explain with Lock and unlock operations with algorithm.	10	L2	CO5
OR					
Q.10		Write a short note on : i) Properties of NOSQL system ii) The CAP theorem iii) Document based NO – SQL system iv) NOSQL Graph database.	20	L2	CO4

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