SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY

(AUTONOMOUS)

II B. Tech I Sem – Question Bank

DATABASE MANAGEMENT SYSTEMS

[194GA05301]

(Computer Science and Engineering)

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CO	COURSE OUTCOMES	BL
CO1	Demonstrate the fundamentals of database management systems.	Understand
CO2	Design and Refine a database using ER Model, Relational Model and normalization.	Apply
CO3	Illustrate a transaction model with various concurrency control Protocols and Recovery Mechanisms.	Understand
CO4	Construct SQL Queries, Functions, stored procedures, and triggers for a Relational Databases.	Apply
CO5	Solve access time for a media with various File Organization.	Apply
CO6	Make use of Operations of B+ Tree Indexing and Hashing indexing	Apply

***Note:** 1.Remeber(**R**), 2.Understand (**U**), 3. Apply (**A**) 4. Analyze (**An**), 5. Evaluate (**E**), 6. Create(**C**)*

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UNIT – 1 (2 Marks)			
#	Questions	CO	BL
1	**Define Database.**	CO1	Remember
2	**Define DBMS.**	CO1	Remember
3	**What are the applications of Database Systems?**	CO1	Remember
4	**What is a Data Model?**	CO1	Remember
5	**Classify Data Models**	CO1	Remember
6	**Define DBA.**	CO1	Remember
7	**What are Database languages?**	CO1	Remember
8	**Define Data Abstraction.**	CO1	Remember
9	**Draw three-tier database Architecture.**	CO1	Remember
10	**Define Data Dictionary.**	CO1	Remember

UNIT – 1 (5/10 Marks)				
#	Questions	M	CO	BL
1	**Draw and Explain Database Architecture.**	10	CO1	Understand
2	**Explain overall structure of Database Management Systems.**	10	CO1	Understand
3	**Describe the components of Storage Manager and Query Processor.**	10	CO1	Understand
4	**Explain the advantages of using a DBMS over File Processing System.**	10	CO1	Understand
5	**Describe the Functions of a DBA.**	10	CO1	Understand
6	**What are the applications of Database Systems explain?**	5	CO1	Understand
7	**Describe the role of Database users.**	5	CO1	Understand
8	**Explain the advantages and disadvantages of DBMS.**	10	CO1	Understand
9	**Explain Data Abstraction with suitable examples.**	10	CO1	Understand
10	**Illustrate Database Languages in detail.**	10	CO1	Understand

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UNIT – 2 (2 Marks)			
#	Questions	CO	BL
1	**What is foreign key? Give example.**	CO2	Remember
2	**Define Domain Relational Calculus. Give the General Form.**	CO2	Remember
3	**What is Relational Algebra?**	CO2	Remember
4	**Classify Aggregate Functions in SQL.**	CO2	Remember
5	**Define Primary key and Candidate key.**	CO2	Remember
6	**Define Tuple Relational Calculus.**	CO2	Remember
7	**Define Trigger.**	CO2	Remember
8	**Define Natural Join.**	CO2	Remember
9	**Define Schema and Instance.**	CO2	Remember
10	**What is union compatibility?**	CO2	Remember

UNIT – 2 (5/10 Marks)				
#	Questions	M	CO	BL
1	**Illustrate set and set Comparison operators in SQL with example.**	10	CO4	Apply
2	**Illustrate nested queries and null values in detail with examples.**	10	CO2	Apply
3	**Illustrate all the relational algebra operations with examples.**	10	CO2	Apply
4	**What are aggregate functions? List the aggregate functions supported by SQL.**	10	CO4	Apply
5	**Explain data manipulation commands in SQL with syntax and examples.**	10	CO4	Apply
6	**Explain data definition commands in SQL with syntax and examples.**	10	CO4	Apply
7	**What is a view in SQL? How it is defined? Explain with an example.**	10	CO4	Apply
8	**Explain tuple relational calculus and domain relational calculus with an example for each**	10	CO2	Understand
9	**Employee(Person_name, street, city)** **Works(person_name, company_name, salary)** **Company(company_name, city)** **Using the above relational database express the following queries in relational algebra notations.** **a. Find the names of all the employees who live in city "Miami".** **b. Find the names of all the employees whose salary is greater than $100,000** **c. Find the names of all the employees and who live in "Maimi" and whose salary is greater than $100,000.**	10	CO2	Apply
10	**Employee(person_name, street, city)** **Works(person_name, company_name, salary)** **Company(company_name, city)** **Using the above relational database express the following queries in relational algebra notations.** **a. Find the names of all employees who works for "First Bank Corporation"** **b. Find the names and cities of residence of all the employees who work for "First Bank Corporation"** **c. Find the names, street address, and cities of residence of all employees who work for "First Bank Corporation" and earn more than $10,000.**	10	CO2	Apply

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UNIT – 3 (2 Marks)			
#	Questions	CO	BL
1	**What are attributes? Give examples.**	CO2	Remember
2	**Define weak and strong entity sets.**	CO2	Remember
3	**What is functional dependency?**	CO2	Remember
4	**What is normalization**	CO2	Remember
5	**Mention the main differences between trivial and non-trivial dependencies.**	CO2	Remember
6	**What are the properties of decompositions.**	CO2	Remember
7	**Compare and contrast between third normal form and BCNF.**	CO2	Understand
8	**What are the anomalies in bad design of database?**	CO2	Remember
9	**Define multivalued functional dependency.**	CO2	Remember
10	**What is redundancy?**	CO2	Remember

UNIT – 3 (5/10 Marks)				
#	Questions	M	CO	BL
1	**Construct an E-R Diagram for a car insurance company whose customers own one or more cars each. Each car has associated with its zero to any number of recorded accidents. Each insurance covers one or more cars, and has one or more premium payments associated with it. Each payment is for a particular period, and has an associated due date, and the date when the payment was received.**	10	CO2	APPLY
2	**Explain different types of relationships using crow's foot notation.**	10	CO2	APPLY
3	**A set of FD's for the relation R {A, B, C, D, E, F} is AB→C, C→A, BC→D, ACD→B, BE→C, EC→FA, FC→BD, and D→E. Find a minimum cover for this set of FD's?**	10	CO2	APPLY
4	**What is ER diagram? Explain the terms of ER diagram and draw the ER diagram for library management system.**	10	CO2	APPLY
5	**Explain about Multi-valued dependencies and Fourth Normal Form.**	10	CO2	APPLY
6	**Draw an E-R diagram for a core banking enterprise system and identify the derived and composite attributes, the strong and weak entity sets, and relationships.**	10	CO2	APPLY
7	**Explain 1NF, 2NF, 3NF and 4NF with suitable example.**	10	CO2	APPLY
8	**Consider a relation R = {ABCDE}. The FD's = {A →B, BC→E, ED→A} list all candidate keys for R?**	10	CO2	APPLY
9	**Explain in detail about relationships, relationships sets, and its cardinalities**	10	CO2	APPLY
10	**Define BCNF. How does BCNF differ from 3NF? Explain with an example**	10	CO2	APPLY

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UNIT – 4 (2 Marks)			
#	Questions	CO	BL
1	**What are wait/die and wound/wait schemas?**	CO3	Remember
2	**What is immediate database modification and deferred database modifications?**	CO3	Remember
3	**What are the properties of a transaction?**	CO3	Remember
4	**State Thomas' write rule.**	CO3	Remember
5	**What are the uses of Concurrency Control?**	CO3	Remember
6	**Draw the state diagram of the transaction.**	CO3	Remember
7	**When two schedules are conflict equivalent?**	CO3	Remember

8	**What is transaction rollback?**	CO3	Remember
9	**What is checkpoint?**	CO3	Remember
10	**What are the uses of database buffering.**	CO3	Remember

UNIT – 4 (5/10 Marks)				
#	**Questions**	**M**	**CO**	**BL**
1	**Explain about how concurrency can be controlled using time stamp methods.**	10	CO3	Apply
2	**Demonstrate any two advanced recovery techniques and their uses.**	10	CO3	Understand
3	**What is serializability? Explain in detail its types.**	10	CO3	Apply
4	**What is Undo and Redo logging explain with examples.**	10	CO3	Apply
5	**Explain different locking mechanisms used in lock based concurrency control.**	10	CO3	Understand
6	**Explain storage structure and their access methods in detail.**	10	CO5	Apply
7	**Explain in detail about log-based recovery.**	10	CO3	Apply
8	**Illustrate multiple granularity locking algortihm with a suitable example**	10	CO3	Understand
9	**Illustrate validation based Protocols with a suitable example.**	10	CO3	Apply
10	**Explain Remote backup Systems.**	10	CO5	Understand

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UNIT – 5 (2 Marks)			
#	**Questions**	**CO**	**BL**
1	**What is indexing and what are the different kinds of indexing?**	CO6	Remember
2	**Mention any two differences between linear and extendible hashing.**	CO6	Remember
3	**Why B+ tree efficient than B tree?**	CO6	Remember
4	**What are the problems with static Hashing?**	CO6	Remember
5	**What are the causes of bucket overflow in a hash file organization**	CO6	Remember
6	**What can do to reduce the occurrence of bucket overflow?**	CO6	Remember
7	**What is the basic difference between static hashing and dynamic hashing?**	CO6	Remember
8	**Differentiate open hashing and closed hashing (overflow chaining).**	CO6	Remember
9	**What is RAID?**	CO5	Remember
10	**What is MTTF?**	CO5	Remember

UNIT – 5 (5/10 Marks)				
#	**Questions**	**M**	**CO**	**BL**
1	**Explain about several types of ordered indexes.**	10	CO6	Understand
2	**Briefly explain about B+ tree index file.**	10	CO6	Apply
3	**Explain hash based indexing and tree based indexing with their data structures and indices.**	10	CO6	Understand
4	**Explain about B+ - tree file organization with its data structure, search and deletion operations.**	10	CO6	Apply
5	**Distinguish between Extendible and Linear Hashing with example.**	10	CO6	Apply
6	**What is an index? What are the different types of indexes? Discuss important properties of an index that affect the efficiency of search.**	10	CO6	Understand
7	**Explain difference between Hash indexes and B+-tree indexes. In particular, Demonstrate equality and range searches work, using an example.**	10	CO6	Apply
8	**Explain static and dynamic hashing techniques.**	10	CO6	Understand
9	**Discuss about clustered, primary and secondary indices in detail.**	10	CO6	Understand
10	**Compare and contrast different types of file organizations.**	10	CO5	Understand

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