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COLLEGE OF TECHNOLOGY
AFFILIATED TO ANNA UNIVERSITY | AUTONOMOUS

Department of Computer Science and Engineering

II YEAR/IV SEMESTER

Question Bank

Course Code: CS3492

Course Name: Database Management Systems

Unit - I: RELATIONAL DATABASES

	UNIT-1 RELATIONAL DATABASES	CO's	Bloom's
S.NO	PART-A		
1	Define Database Management System and its applications. Database management system (DBMS) is a collection of interrelated data and a set of programs to access those data. Applications: Banking, Airlines, Universities, Credit card transactions, Tele communication, Finance, Sales, Manufacturing and Human resource.	CO1	K1
2	List the advantages of DBMS The advantages of using a DBMS are a) Controlling redundancy b) Restricting unauthorized access c) Providing multiple user interfaces d) Enforcing integrity constraints. e) Providing backup and recovery	CO1	K1
3	Classify the levels of abstraction. a) Physical level-Describes how the data are actually stored. b) Logical level-Describes what data are stored and what relationships exist among those data c) View level – Describes the part of entire database	CO1	K1
4	What are the types of data models? a) Entity relationship model b) Relational model c) Hierarchical model d) Network model e) Object based data model(Object Oriented & Object relational)	CO1	K1



5	What is Embedded SQL? An embedded SQL statement is distinguished from the host language statements by enclosing it between EXEC SQL or EXEC SQL BEGIN and a matching END-EXEC or EXEC SQL END (or semicolon) [™] Syntax may vary with language [™] Shared variables (used in both languages) usually prefixed with a colon (:) in SQL	CO1	K1						
7	Define relational algebra. The relational algebra is a procedural query language. It consists of a set of operations that take one ortwo relation as input and produce a new relation as output.	CO1	K1						
8	What are referential integrity constraints? A value that appears in one relation for a given set of attributes also appears for a certain set ofattributes in another relation.	CO1	K1						
9	Define SQL . Structured Query Language (SQL) is the standard common set used to communicate with the relational database management systems. All tasks related to relational data management—creating tables, querying the database for information, modifying the data in the database, deleting them, granting access to users, and so on — can be done using SQL.	CO1	K1						
10	List the DML Commands used in SQL. SELECT: This command is used to retrieve rows from a table.The select syntax: SELECT [column name(s)] from [table name] where [conditions].UPDATE: This command modifies data of one or more records. The update command syntax: UPDATE table name SET column name = value where [condition]. INSERT: This command adds one or more records to a database table.The insert command syntax: INSERT INTO table name [column(s)] VALUES [value(s)]. DELETE: This command removes one or more records from a table according tospecified conditions. Delete command syntax: DELETE FROM table name where [condition].	CO1	K1						
11	Differentiate Delete and Truncate <table><tr><th>Delete</th><th>Truncate</th></tr><tr><td>The DELETE command is used to delete specified rows(one or more).</td><td>While this command is used to delete all the rows from a table.</td></tr><tr><td>It is a DML(Data Manipulation Language) command.</td><td>While it is a DDL(Data Definition Language) command.</td></tr></table>	Delete	Truncate	The DELETE command is used to delete specified rows(one or more).	While this command is used to delete all the rows from a table.	It is a DML(Data Manipulation Language) command.	While it is a DDL(Data Definition Language) command.	CO1	K1
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	<p>There may be a WHERE clause in the DELETE command in order to filter the records.</p> <p>In the DELETE command, a tuple is locked before removing it.</p> <p>The DELETE statement removes rows one at a time and records an entry in the transaction log for each deleted row.</p>	<p>While there may not be WHERE clause in the TRUNCATE command.</p> <p>While in this command, the data page is locked before removing the table data.</p> <p>TRUNCATE TABLE removes the data by deallocating the data pages used to store the table data and records only the page deallocations in the transaction log</p>		
12	<p>What is Data Control Language?</p> <p>Create privileges to allow users access to, and manipulation of, the database. There are two main commands:</p> <p>GRANT to grant a privilege to a user</p> <p>REVOKE to revoke (remove) a privilege from a user</p>		CO1	K1
13	<p>Define Dynamic SQL.</p> <p>Programs that contain embedded dynamic SQL statements must be precompiled like those that contain static SQL, but unlike static SQL, the dynamic statements are constructed and prepared at run time. The source form of a dynamic statement is a character string that is passed to DB2 by the program using the static SQL statement PREPARE or EXECUTE IMMEDIATE.</p>		CO1	K1
14	<p>Define instance and schemas.</p> <ul style="list-style-type: none"> - Database change over times as information is inserted and deleted. - The collection of information stored in the database at a particular moment called an instance of the database. - The overall design of the database is called the database schema 		CO1	K1
15	<p>List the aggregation functions in SQL</p> <p>Aggregate functions are functions that take a collection of values as input and return a single value as output.</p> <p>SQL offers 5 built in aggregate functions: avg - average value</p> <p>min - minimum value</p> <p>max - maximum value</p> <p>sum - sum of values</p> <p>count - number of values.</p>		CO1	K1
16	<p>Define views.</p> <p>A view is an object that gives the user a logical view of data from an underlying table or tables (relation or relations). It is not desirable for all users to see the entire logical model.</p>		CO1	K1
17	<p>What is Derived attribute? Give an Example</p>		CO1	K1



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	PART-B	CO's	Bloom's																																			
1	Explain the basic architecture of a database management systems.	CO1	K2																																			
2	Discuss about the different types of model in DBMS.	CO1	K2																																			
3	With relevant example to discuss about the various operations of Relation Algebra.	CO1	K2																																			
4	Explain the different types of languages used in SQL with an example.	CO1	K2																																			
5	Discuss about the types of keys with an example.	CO1	K2																																			
6	Explain in detail about Advanced SQL and Embedded SQL.	CO1	K2																																			
7	Consider the employee database , where the primary keys are Underlined. employee(<u>empname</u> ,street,city),works(<u>empname</u> ,companyname,salary) company(<u>companyname</u> ,city), manages(<u>empname</u> ,management) Give an expression in the relational algebra for each request.	CO1	K3																																			
8	<p>EMPLOYEE</p> <table><tr><th>ENO</th><th>NAME</th><th>DOB</th><th>GENDER</th><th>DCODE</th></tr><tr><td>12345</td><td>HAMEN</td><td>24-MAR-2001</td><td>M</td><td>201</td></tr><tr><td>12346</td><td>VINI</td><td>12-MAR-2001</td><td>F</td><td>202</td></tr><tr><td>12347</td><td>ANI</td><td>11-JAN-1999</td><td>F</td><td></td></tr><tr><td>12348</td><td>PETER</td><td>14-FEB-2001</td><td>M</td><td></td></tr></table> <p>DEPARTMENT</p> <table><tr><th>DCODE</th><th>DNAME</th></tr><tr><td>201</td><td>COMPUTER SC</td></tr><tr><td>202</td><td>INFN SC</td></tr><tr><td>203</td><td>CIVIL</td></tr><tr><td>204</td><td>MECHANICAL</td></tr></table> <p>Consider the above relations: The Primary key of each relation is underlined. Outline Cartesian product,equi join,left outer join,right outer join,full outer join operations in relational algebra.Illustrate the above relational algebra operations with the EMPLOYEE and DEPARTMENT relations.</p>	ENO	NAME	DOB	GENDER	DCODE	12345	HAMEN	24-MAR-2001	M	201	12346	VINI	12-MAR-2001	F	202	12347	ANI	11-JAN-1999	F		12348	PETER	14-FEB-2001	M		DCODE	DNAME	201	COMPUTER SC	202	INFN SC	203	CIVIL	204	MECHANICAL	CO1	K3
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	UNIT II DATABASE DESIGN	CO's	Bloom's
S.NO	PART-A		
1	What is an entity-relationship model? The entity relationship model is a collection of basic objects called entities and relationship among those objects. An entity is a thing or object in the real world that is distinguishable from other objects.	CO2	K1
2	What is an entity and entity set? An entity is an object that exists and is distinguishable from other objects. Example: specific person, company, event, plant Entity set: The set of all entities of the same type is termed as an entity set.	CO2	K1
3	Define single valued and multivalued attributes. Single valued attributes : Attributes with a single value for a particular entity Multivalued attributes : Attributes with a set of value for a particular entity	CO2	K1
4	Define null values. In some cases a particular entity may not have an applicable value for an attribute or if we do not know the value of an attribute for a particular entity. In these cases null value is used	CO2	K1
5	Define Mapping cardinalities. Mapping cardinalities or cardinality ratios express the number of entities to which another entity can be associated. Mapping cardinalities must be one of the following: <ul style="list-style-type: none"> One to one One to many Many to one Many to many 	CO2	K1
6	Define the terms Generalization and Aggregation Generalization is a containment relationship that exists between a high-level Entity set and one or more low-level entity set. Aggregation is an abstraction through which relationships are treated as higher-level entities	CO2	K1
7	Compare weak and strong entity sets. Weak entity set : entity set that do not have key attribute of their own are called weak entity sets. Strong entity set : Entity set that has a primary key is termed a strong entity set	CO2	K1
8	What is ER diagrams? An entity-relationship diagram is a data modeling technique that creates a graphical representation of the entities, and the relationships between entities, within an information system.	CO2	K1
9	What are the steps involved in creating ERD? a) Identify the entities. b) Find the relationships c) Identify key attributes for every entity d) Draw the ERD.	CO2	K1
10	What is normalization? Database normalization is the process of organizing the fields and tables of a relational database to minimize redundancy and eliminate dependency. Normalization usually involves dividing large tables into smaller (and less redundant) tables and defining relationships between them.	CO3	K1



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11	Define 1NF. A relation said to be first normal form if and if only all attributes are atomic in nature	CO3	K1
12	Define 2NF. A relation said to be second normal form if and if only relation should be in first normal form and to	CO3	K1



	eliminate partial dependency		
13	Define 3NF. A relation said to be third normal form if and only if relation should be in second normal form and to eliminate transitive dependency.	CO3	K1
14	Define BCNF. A relational schema R is in Boyce–Codd normal form if and only if for every one of its dependencies X → Y, at least one of the following conditions hold ™ X → Y is a trivial functional dependency (Y ⊆ X) ™ X is a super key for schema R	CO3	K1
15	What is 4NF and 5NF? A Table is in 4NF if and only if, for every one of its non-trivial multivalued dependencies X Y, X is a super key that is, X is either a candidate key or a superset A table is said to be in the 5NF if and only if every non-trivial join dependency in it is implied by the candidate keys.	CO3	K1
16	Define De-normalization. De-normalization is the process of attempting to optimize the read performance of a database by adding redundant data or by grouping data.	CO3	K1
17	What is sub-class and super class? For example, members of entity Employee can be grouped further into Secretary, Engineer, Manager, Technician, and Salaried Employee. The set listed is a subset of the entities that belong to the Employee entity, which means that every entity that belongs to one of the sub sets is also an Employee. Each of these sub-groupings is called a subclass, and the Employee entity is called the super-class.	CO2	K1
18	List out the constraints on Specialization and Generalization. Several specializations can be defined on an entity type. ™ Entities may belong to subclasses in each of the specializations. ™ The specialization may also consist of a single subclass, such as the managers specialization, in this case we don't use the circle notation.	CO2	K1
PART-B			
1	Explain about Entity relationship model with ER diagram and example.	CO2	K1
2	Draw an ER diagram for Banking System and Payroll system.	CO2	K3
3	What is functional dependency? Explain the types of it with an example.	CO2	K1
4	What is normalization? Explain the different types of normal forms with an example.	CO3	K1
5	Apply an ER diagram for Hospital Management System.	CO2	K3
6	Construct ER-Relation mapping diagram for College management system.	CO2	K3
7	Define generalization and aggregation. Demonstrate it using ER diagram.	CO2	K1
8	Compare the different types of normal form in detail.	CO3	K3



	UNIT-III TRANSACTIONS	CO's	Bloom's
S.NO	PART-A		
1	What is a transaction? A transaction is a logical unit of work; it begins with the execution of a BEGIN TRANSACTION operation, and ends with the execution of a COMMIT or ROLLBACK operation.	CO4	K1
2	What are the ACID properties? Atomicity: Atomicity ensures that a transaction is treated as a single, indivisible unit of work Consistency: Consistency ensures that a transaction brings the database from one valid state to another Isolation: Concurrent transactions are executed as if they were the only transactions in the system, preventing interference and maintaining data integrity. Durability: Durability guarantees that once a transaction is committed, its changes are permanent and will survive any subsequent system failures or crashes.	CO4	K1
3	List any four SQL statements used for transaction control d) BEGIN TRANSACTION: Initiates a new transaction block. e) COMMIT- Commits the current transaction, making all changes made during the transaction permanent. f) ROLLBACK:– Rolls back the current transaction, undoing all changes made during the transaction. g) SAVEPOINT: Creates a savepoint within the current transaction to which you can later roll back.	CO4	K1
4	What are the two types of serializability? A (possibly concurrent) schedule is serializable if it is equivalent to a serial schedule. Different forms of schedule equivalence gives rise to the notions of: f) Conflict serializability g) View serializability	CO4	K1
5	What is Conflict-Serializability? Conflict-Serializability is a concept in the context of database management systems that ensures the correctness of concurrent transactions by defining a relationship between the execution schedule of concurrent transactions and an equivalent serial schedule.	CO4	K1
6	What are two pitfalls (problem) of lock-based protocols? Two common pitfalls are: Deadlocks: Reduced Concurrency and Performance:	CO4	K1
7	What is meant by deadlock? A system is in a deadlock state if there exists a set of transaction such that every transaction in the set is waiting for another transaction in the set to release the lock.	CO4	K1
8	Define the phases of two phase locking protocol <i>Growing phase</i> : a transaction may obtain locks but not release any lock. <i>Shrinking phase</i> : a transaction may release locks but may not obtain any new locks.	CO4	K1
9	What is Time-stamp based protocol? Timestamp based protocol ensures Serializability. It selects an ordering among transactions in advance using time stamps. With each Transaction in the system, a unique	CO4	K1



	fixed timestamp is associated. It is denoted by $TS(T_i)$. This timestamp is assigned by the database system before the transaction T_i status execution. If a transaction T_i has been assigned time-stamp $TS(T_i)$ and new transaction T_j enters the system, then $TS(T_i) < TS(T_j)$.		
10	<p>What is concurrency control?</p> <p>Concurrency control is a fundamental concept in database management systems (DBMS) that ensures the consistency and correctness of a database when multiple transactions are executed concurrently. The goal of concurrency control is to manage and coordinate the simultaneous execution of transactions to prevent undesirable phenomena such as lost updates, inconsistent reads, and conflicts between transactions. Concurrency control mechanisms help maintain the ACID properties (Atomicity, Consistency, Isolation, Durability) of transactions in a multi-user environment.</p>	CO4	K1
11	<p>Draw the states of Transaction.</p> <pre> graph LR active((active)) --> partially_committed((partially committed)) active --> failed((failed)) partially_committed --> committed((committed)) partially_committed --> failed failed --> aborted((aborted)) </pre> <p>States of transaction</p>	CO4	K1
12	<p>What are the four conditions for dead lock?</p> <p>The four necessary conditions for a deadlock to occur, known as the Coffman conditions or the deadlock characterization conditions, are:</p> <p>Mutual Exclusion: Condition: At least one resource must be held in a non-shareable mode (exclusive control) by a process. This means that only one process can use the resource at a time. Implication: If a process is holding a resource, no other process can simultaneously hold or use the</p>	CO4	K1



	<p>same resource.</p> <p>Hold and Wait: Condition: A process must be holding at least one resource and waiting to acquire additional resources held by other processes. Implication: Processes can acquire resources incrementally and may hold some resources while waiting for others, creating the potential for a cyclic waiting scenario.</p> <p>No Preemption: Condition: Resources cannot be forcibly taken away from a process. Only the process holding a resource can voluntarily release it. Implication: Processes must explicitly release resources they hold, and other processes must wait for those resources to be released.</p> <p>Circular Wait: Condition: There must exist a circular chain or cycle of two or more processes, each of which is waiting for a resource held by the next process in the chain. Implication: The circular wait condition completes the deadlock scenario, as each process in the cycle is waiting for a resource held by another process, creating a cycle of dependencies</p>		
13	<p>Difference between deadlock prevention and deadlock avoidance.</p> <p>Deadlock prevention involves designing static resource allocation policies to eliminate or reduce the likelihood of deadlock conditions, potentially leading to reduced resource utilization.</p> <p>Deadlock avoidance, on the other hand, involves dynamic decision-making based on the current state of the system to prevent the occurrence of deadlocks while optimizing resource utilization.</p> <p>Both strategies have their advantages and disadvantages, and the choice between them depends on the specific requirements and characteristics of the system.</p>	CO4	K1
14	<p>What are the broad phases of ARIES?</p> <p>ARIES operates in three broad phases:</p> <ul style="list-style-type: none"> ➤ Analysis: Build the REDO and UNDO lists ➤ Redo: Start from a position in the log determined in the analysis phase and restore the database to the state it was in at the time of the crash. ➤ Undo: Undo the effects of transactions that failed to commit. 	CO4	K1
15	<p>What is shadow paging?</p> <p>It is a method for managing the physical storage of data in a way that allows for efficient recovery and ensures the durability property of transactions. The page table is typically stored in a fixed location and is not modified during transaction execution. During the execution of a transaction, modifications are made in a shadow copy of the database. When a transaction is committed, the page table is updated to point to the shadow copy.</p>	CO4	K1



S.NO.	PART-B	CO's	Bloom's
1	Why is Recovery needed? Discuss any two Recovery Techniques	CO4	K2
2	Explain about ACID properties with suitable example	CO4	K2
3	Discuss in detail about two phase commit protocol.	CO4	K2
4	What is Deadlock? List and discuss the four conditions for Deadlock	CO4	K2
5	Explain the following protocols for concurrency control : ➤ Lock based protocols. ➤ Time stamp based protocols	CO4	K2
6	Explain in detail about Advanced SQL and Embedded SQL.	CO4	K2
7	Consider the following schedules. The actions are listed in the order they are scheduled, and prefixed with the transaction name. S1:T1:R(X),T2:R(X),T1:W(Y),T2:W(Y),T1:R(Y),T2:R(Y) S2:T3:W(X),T1:R(X),T1:W(Y),T2:R(Z),T2:W(Z),T3:R(Z) For each of the schedule, answer the following questions: What is the precedence graph for the schedule? (i)Is the schedule conflict –serializable? (ii)if so,what are all the conflict equivalent serial schedules? (iii)is the schedule view-serializable?if so, what are all the view equivalent serial schedules?	CO4	K3
8	T1:read(A); Read (B); If A=0 then B:=B+1; Write (B). T2:read(B); Read (A); If B=0 then A:=A+1; Write (A). Add lock and unlock instruction to transactions T1 and T2,so that they observe the two phase locking protocol. Can the execution of these transactions result in a deadlock	CO4	K3
9.	Explain AIRES algorithm	CO4	K2
10.	Explain Shadow paging	CO4	K2



S.NO	UNIT-IV IMPLEMENTATION TECHNIQUES	CO's	Bloom's
	PART-A		
1	<p>List out the levels of RAID.</p> <p>RAID level 0 –Block striping non-redundant</p> <p>RAID level 1 –Mirroring</p> <p>RAID level 2 –Memory style Error correcting code</p> <p>RAID level 3 –Bit interleaved parity</p> <p>RAID level 4 –Block interleaved parity</p> <p>RAID level 5 – Block interleaved distributed parity</p> <p>RAID level 6 – P+Q redundancy disk</p>	CO5	K1
2	<p>List the merits and demerits of B+ tree index structure.</p> <p>Merits</p> <p>Insertion in B+tree is easy.</p> <p>Deletion in B+ tree is simple than B tree.</p> <p>Demeris :</p> <p>Requires redundant storage for search-key values every search key appears in some leaf node. Several are repeated in non-leaf node.</p> <p>Lookup on B+-tree requires traversal of a path from root of tree to some leaf node.</p>	CO5	K1
3	<p>What are the two types of ordered indices?</p> <ul style="list-style-type: none"> • Primary index • Secondary index 	CO5	K1
4	<p>What are different types of file organization?</p> <ul style="list-style-type: none"> • Sequential file organization • Heap file organization • Hashing file organization 	CO5	K1
5	<p>What are the factors to evaluate the indexing technique?</p> <ul style="list-style-type: none"> • Access types • Access time • Insertion time • Deletion time • Space overhead 	CO5	K1



6	<p>What is B+ tree?</p> <p>A B+ tree is an n-ary tree with a variable but often large number of children per node. The root may be either a leaf or a node with two or more children. A B+ tree can be viewed as a B-tree in which each node contains only keys (not key-value pairs), and to which an additional level is added at the bottom with linked leaves.</p>	CO5	K1
7	<p>Define Seek time.</p> <p><i>Seek time:</i> Time it takes to reposition the arm over the correct track. The seek time ranges from 2 to 30 milliseconds. The average seek time is one-third the worst case seek time and one half the maximum seek time. Average seek time currently ranges between 4 to 10 milliseconds.</p>	CO5	K1
8	<p>Define File organization.</p> <p>The database is stored as a collection of files. Each file is a sequence of records. A record is a sequence of fields. We have a file with 2 types of records.</p> <p>Fixed length records.</p> <p>Variable length records.</p>	CO5	K1
9	<p>What are the two main goals of parallelism?</p> <p>Load –balance multiple small accesses, so that the throughput of such accesses increases.</p> <p>Parallelize large accesses so that the response time of large accesses is reduced</p>	CO5	K1
10	<p>What are the factors to evaluate the indexing technique?</p> <ul style="list-style-type: none"> • Access types • Access time • Insertion time • Deletion time • Space overhead 	CO5	K1
11	<p>What are the two types of blocks in the fixed-length representation?</p> <p><i>Anchor block:</i> Contains the first record of a chain.</p> <p><i>Overflow block:</i> Contains the records other than those that are the first record of a chain.</p>	CO5	K1
12	<p>List the five methods of file organization</p> <ul style="list-style-type: none"> • Sequential organization. • Indexed-sequential organization. • Direct or Hash organization. • Heap organization. • Clustered Organization 	CO5	K1
13	<p>List the advantages and disadvantages of B+ tree.</p> <p>Advantage of B+-tree index files</p> <ul style="list-style-type: none"> • Automatically reorganizes itself with small, local changes, in the face of insertions and deletions. Reorganization of entire file is not required to maintain performance. <p>Disadvantage of B+-tree</p> <ul style="list-style-type: none"> • Extra insertion and deletion overhead, space overhead. 	CO5	K1



14	Difference between Primary index and Secondary index.			CO5	K1
	S. No	Primary index	Secondary index		
	1.	An index on a set of fields that includes the unique primary key for the field	An index that is not a primary key		
	2.	Guaranteed not to contain duplicates	May have duplicates		
	3.	Also Called a Clustered index.	Also Called a Non-Clustered index.		
	4.	Eg: Employee ID	Eg: Employee name		
15.	Difference between dense index and parse index. Dense Index An index record is created for every row of the table. Records can be located directly as each record of the index holds the search key value and the pointer to the actual record. Sparse Index Index records are created only for some of the records. To locate a record: find the index record with the largest search key value \leq the search key value we are looking for start at that record pointed to by this index record and proceed along the pointers in the file (that is, sequentially) until we find the desired record.			CO5	



S.NO.	PART-B	CO's	Bloom's
1	What are the various ways of organizing records in files and explain any one file organization in detail.	CO5	K2
2	Describe the structure of B+ tree and list the characteristics of B+ tree.	CO5	K2
3	What is RAID? Briefly explain different level of RAID.	CO5	K2
4	Give brief notes on overviews of physical storage media.	CO5	K2
5	Describe briefly about indexing and hashing.	CO5	K2
6	Explain about query processing in detail.	CO5	K2
7	Discuss about query optimization in detail.	CO5	K3



S.NO	UNIT-5 ADVANCED TOPICS	CO's	Bloom's
	PART-A		
1	What are the different aspects of security problem? There are many aspects to the security problem. Here are some of them: <ul style="list-style-type: none"> i. Legal, social, and ethical aspects ii. Physical controls iii. Policy questions iv. Operational problems v. Hardware controls vi. Operational system support 	CO5	K1
2	What is discretionary access control? In the case of discretionary control, a given user will typically have different access rights on different objects; further, there are few inherent limitations regarding which users can have which rights on which objects. Discretionary schemes are thus flexible.	CO5	K1
3	What is mandatory access control? In the case of mandatory control, by contrast, each data object is labeled with a certain classification level, and each user is given a certain clearance level.	CO5	K1
4	What are the contents of audit trail record? A typical audit trail record might contain the following information: <ul style="list-style-type: none"> ➤ Request(source text) ➤ Terminal from which the operation was invoked ➤ User who invoked the operation ➤ Date and time of the operation ➤ Relvar(s), tuples(s),attribute(s) affected ➤ Before images(old values) ➤ After images(new values) 	CO5	K1
5	What is entity integrity? No component of the primary key of any base relvar is allowed to accept nulls are called entity integrity.	CO5	K1
6	Mention the reasons used for view. There are many reasons why view support is desirable. Here are some of them:	CO5	K1



	<ul style="list-style-type: none"> ➤ Views provide a shorthand or –macro capability. ➤ Views allow the same data to be seen by different users indifferent ways at the same time. ➤ Views provide automatic security for hidden data. ➤ Views can provide logical data independence. 		
7	<p>Define the golden rule.</p> <p>Golden Rule is</p> <p>No update operation must ever assign to any relvar a value that causes its relvar predicate to evaluate to FALSE.</p> <p>Or (a little loosely):</p> <p>No relvar must ever be allowed to violate its own predicate.</p>	CO5	K1
8	<p>Define a distributed database system.</p> <p>A distributed database system consists of a collection of sites, connected together via some kind of communications network, in which:</p> <p>a. Each site is a full database system site in its own right but</p> <p>The sites have agreed to work together so that a user at any site can access data anywhere in the network exactly as if the data were all stored at the users own site.</p>	CO5	K1
9	<p>Define a distributed database management system.</p> <p>A new software component at each site logically an extension of the local DBMS provides the necessary partnership functionality, and it is the combination of these new components together with the existing DBMSs that constitutes what is usually called the distributed database management system</p>	CO5	K1
10	<p>Mention the advantages of distributed databases.</p> <p>It enables the structure of the database to mirror the structure of the enterprise-local data can be kept locally, where it most logically belongs- while at the same time remote data can be accessed when necessary.</p>	CO5	K1
11	<p>What is the fundamental principle of distributed database?</p> <p>The fundamental principle of distributed database is to the user, a distributed system should look exactly like a non-distributed system.</p>	CO5	K1
12	<p>What are the objectives of distributed databases?</p> <p>The objectives of distributed databases are</p> <ol style="list-style-type: none"> 1) Local autonomy 2) No reliance on a central site 3) Continuous operation 4) Location independence 5) Fragmentation independence 	CO5	K1



	6) Replication independence 7) Distributed query processing 8) Distributed transaction management 9) Hardware independence 10) Operating system independence		
13	List down the problems of distributed databases? The problems are <ul style="list-style-type: none"> ➤ Query processing ➤ Catalog management ➤ Update propagation ➤ Recovery ➤ Concurrency 	CO5	K1
14	Define client/server systems. A client/server system is a distributed system in which <ul style="list-style-type: none"> a) Some sites are client sites and some are server sites b) All data resides at the server sites c) All applications execute at the client sites, and d) the seams show 	CO5	K1
15	What is meant by Access Control? In the fields of physical security and information security, access control is the selective restriction of access to a place or other resource. The act of accessing may mean consuming, entering, or using. Permission to access a resource is called authorization. Locks and login credentials are two analogous mechanisms of access control.	CO5	K1

	PART-B	CO's	Bloom's
1	Explain in detail Data Classification in DBMS.	CO5	K2
2	Discuss in detail Access Control mechanism.	CO5	K2
3	Explain about Distributed Databases.	CO5	K2
4	Elaborate on Information retrieval and Relevance Ranking.	CO5	K2
5	Explain in detail Threats and risks in Database Management System.	CO5	K2
6	Discuss about the access Control Mechanisms and Cryptography Methods to secure the Databases.	CO5	K2
7	Suppose that you have been hired as a consultant to choose a database system for your clients application. For each of the following applications, state what type of database system (relational, persistent programming language based OODB, object relational; do not specify a commercial product) you would recommend. Justify your recommendation	CO5	K3



	<p>i) A computer aided design system for manufacturer of airplanes</p> <p>ii) A system to track contributions made to candidates for public office.</p> <p>iii) an information system to support the making of movies.</p>																
8	<p>Trace the results of using the Apriori algorithm on grocery store example to support threshold $s=33.34\%$ and confidence threshold $c=60\%$. Show the candidate and frequent itemsets for each database scan. Enumerate all the final frequent itemsets. Also indicate the association rules that are generated and highlight the strong ones, sort them by confidence.</p> <table><tr><th>Transaction ID</th><th>Items</th></tr><tr><td>T1</td><td>HotDogs,Buns,Ketchup</td></tr><tr><td>T2</td><td>HotDogs,Buns</td></tr><tr><td>T3</td><td>HotDogs,Coke,Chips</td></tr><tr><td>T4</td><td>Chips,Coke</td></tr><tr><td>T5</td><td>Chips,Ketchup</td></tr><tr><td>T6</td><td>HotDogs,Coke,Chips</td></tr></table>	Transaction ID	Items	T1	HotDogs,Buns,Ketchup	T2	HotDogs,Buns	T3	HotDogs,Coke,Chips	T4	Chips,Coke	T5	Chips,Ketchup	T6	HotDogs,Coke,Chips	CO5	K3
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