



**SIDDARTHA INSTITUTE OF ENGINEERING AND TECHNOLOGY
PUTTUR
(AUTONOMOUS)**

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QUESTION BANK (DESCRIPTIVE)

Subject with Code : Database Management Systems(20CS0505)
Year & Sem : II-B.Tech & I-Sem

**Course & Branch : B.Tech –
CSE, CSM, CAD, CIA & CSIT**
Regulation : R20

UNIT – I
INTRODUCTION TO DATABASE, DATABASE DESIGN

1	(a)	Define Database. Discuss about applications of Database Systems.	[L1][CO1]	[6M]
	(b)	List out the purpose of Database Systems.	[L1][CO1]	[6M]
2	(a)	Illustrate about Views of data.	[L2][CO1]	[6M]
	(b)	Outline the Data Abstraction and discuss levels of Abstraction.	[L2][CO1]	[6M]
3	(a)	Why is the use of data independence? Explain by listing some of its major advantages.	[L4][CO1]	[6M]
	(b)	Discuss about various data models.	[L2][CO1]	[6M]
4		Classify Database languages with examples.	[L4][CO1]	[12M]
5	(a)	Create the DDL Commands – Table Creation, Altering the table structures, truncating a table and dropping a table.	[L6][CO1]	[6M]
	(b)	Develop the DML Commands – Insert, Select Commands, update & delete Commands.	[L6][CO1]	[6M]
6	(a)	Explain the Architecture of Database with a neat diagram.	[L2][CO1]	[6M]
	(b)	Differentiate between Database users and administrators.	[L4][CO1]	[6M]
7		Explain about ER model and Component of ER Diagram.	[L2][CO2]	[12M]
8	(a)	Examine the logical database design (ER to Relational) with suitable examples.	[L3][CO2]	[6M]
	(b)	What is an Attribute? Explain different types of Attributes.	[L2][CO2]	[6M]
9		Distinguish between Relationship and Relationship set.	[L5][CO2]	[12M]
10		Construct ER Diagram for University (i.e. Banking system, Hospital management system, Railway Reservation system, Online Shopping)	[L6][CO2]	[12M]

UNIT – II
RELATIONAL ALGEBRA AND CALCULUS AND FORM OF BASIC SQL QUERY

1	(a)	Identify relational database query language?	[L2][CO1]	[6M]
	(b)	Illustrate different operations in Relational algebra with an example?	[L3][CO1]	[6M]
2	(a)	Compare Selection and Projection	[L5][CO1]	[6M]
	(b)	Develop the working on union, intersection and minus operations	[L6][CO1]	[6M]
3	(a)	Discuss about the operators renaming, division.	[L2][CO1]	[6M]
	(b)	Classify the Relational calculus in detail?	[L4][CO1]	[6M]
4		What is a Join? Discuss about various joins used in SQL.	[L2][CO1]	[12M]
5	(a)	Discuss about Complex integrity constraints in SQL.	[L2][CO1]	[6M]
	(b)	Create a sub query to establish the WHERE, ANY, AS and ALL sub queries with example.	[L6][CO1]	[6M]
6	(a)	Discuss the super key, candidate key, primary key, alternate key , composite key , and Foreign key.	[L2][CO1]	[6M]
	(b)	Evaluate Order by, Group by and Having Clauses with example.	[L5][CO1]	[6M]
7	(a)	Express a nested query?	[L6][CO1]	[2M]
	(b)	Create a nested query to find the names of sailors who have reserved both a red and Green boat?	[L6][CO1]	[5M]
	(c)	Construct a correlated nested query to find the names of sailors who have reserved all boats?	[L6][CO1]	[5M]
8	(a)	Illustrate Set comparison operator	[L3][CO1]	[6M]
	(b)	Distinguish different types of aggregate operators with examples in SQL.	[L5][CO1]	[6M]
9	(a)	What are Views in SQL? Give an example.	[L2][CO1]	[6M]
	(b)	Define NULL VALUE? Describe the Disallowing null values in database.	[L2][CO1]	[6M]
10	(a)	Define comparison using Null Values.	[L1][CO1]	[6M]
	(b)	Define trigger. Differentiate row level and statement level triggers.	[L3][CO1]	[6M]

UNIT-III

INTRODUCTION TO SCHEMA REFINEMENT AND PROPERTIES OF DECOMPOSTIONS

1	a)	Illustrate redundancy and the problems that it can cause.	[L3][CO3]	[6M]
	b)	Explain about Functional Dependency.	[L2][CO3]	[6M]
2	a)	Compare Trivial and Non – Trivial Functional Dependencies with example.	[L4][CO3]	[6M]
	b)	Explain the following with suitable example. (i) Full functional dependency. (ii) Partial dependency.	[L2][CO3]	[6M]
3		Outline the terminologies: Partial Dependency, Transitive Dependency, Determinant, MVD, Join Dependency.	[L2][CO3]	[12M]
4	a)	Consider the schema: R (A, B, C, G, H, I) and the set of FD's (A → B, A → C, CG → H, CG → I, B → H). Prove the members of F ⁺ : A → H, CG → HI, AG → I with axioms is true.	[L5][CO3]	[6M]
	b)	Consider the relation scheme R = {E, F, G, H, I, J, K, L, M, M} and the set of functional dependencies {{E, F} -> {G}, {F} -> {I, J}, {E, H} -> {K, L}, K -> {M}, L -> {N} on R. What is the key for R?	[L5][CO3]	[6M]
5	a)	Illustrate the types of anomalies with example.	[L3][CO4]	[6M]
	b)	What is Normalization? List out the of purpose normalization.	[L1][CO3]	[6M]
6		Explain in detail about 1NF, 2NF, 3NF and BCNF with example.	[L2][CO3]	[12M]
7	a)	Compare 3NF and BCNF with example.	[L4][CO3]	[6M]
	b)	The relation schema Student_Performance (name, courseNo, rollNo, grade) has the following FDs: name,courseNo->grade rollNo,courseNo->grade name->rollNo rollNo->name What is the highest normal form of this relation scheme?	[L3][CO3]	[6M]
8	a)	Discuss about preserving Decomposition.	[L2][CO3]	[6M]
	b)	Define Decomposition. List out the properties of decomposition.	[L1][CO3]	[6M]
9	a)	What is the use of Fourth normal form? Explain by listing some of its major advantages.	[L2][CO3]	[6M]
	b)	Differentiate between about 4NF/MVD with example.	[L4][CO3]	[6M]
10	a)	What is the use of Fifth normal form? Explain by listing some of its major advantages.	[L2][CO3]	[6M]
	b)	Discover about 5NF/PJNF with example.	[L4][CO3]	[6M]

UNIT – IV**TRANSACTION AND CONCURRENCY**

1	(a)	Define a Transaction. List the properties of transaction	[L1][CO4]	[6M]
	(b)	How do you implement Atomicity and Durability	[L2][CO4]	[6M]
2		Explain ACID properties and illustrate them through examples.	[L2][CO4]	[12M]
3	(a)	What is a Transaction? Explain the States of the transaction with a neat sketch.	[L2][CO4]	[6M]
	(b)	Analyze the characteristics of Transaction	[L4][CO4]	[2M]
4		Develop the TCL and DCL Commands – Commit, Rollback, Savepoint, Grant and Revoke.	[L6][CO4]	[12M]
5	(a)	What is Schedule? Explain the serial schedule with examples.	[L2][CO4]	[6M]
	(b)	List out the types of Schedules with a neat sketch.	[L1][CO4]	[6M]
6		Explain the following a) Cascading Schedule b) Cascadeless Schedule c) Strict Schedule	[L2][CO4]	[12M]
7	(a)	Illustrate Concurrent execution of transaction with examples	[L3][CO5]	[6M]
	(b)	Discuss various concurrency control protocols.	[L2][CO5]	[6M]
8		Explain briefly about serializability with example.	[L2][CO5]	[12M]
9	(a)	Demonstrate Conflict Serializability in detail.	[L2][CO5]	[6M]
	(b)	Discuss View Serializability in detail.	[L2][CO5]	[6M]
10	(a)	Compare serializability and non-serializability	[L5][CO5]	[6M]
	(b)	List out the types of failures.	[L1][CO5]	[6M]

UNIT – V**RECOVERABILITY, PHYSICAL STORAGE AND DATABASE CONCEPTS**

1	(a)	Discuss about Recoverability.	[L2][CO5]	[6M]
	(b)	Explain Recovery with concurrent Transaction.	[L2][CO5]	[6M]
2	(a)	Illustrates the basic principle of media recovery on a database.	[L3][CO5]	[6M]
	(b)	Discuss about Times tamp based locking protocols?	[L2][CO5]	[6M]
3		Identify the two phase locking protocol and strict two phase locking protocols?	[L3][CO5]	[12M]
4	(a)	Classify different types of locks.	[L4][CO5]	[6M]
	(b)	Describe the deadlock prevention schemes.	[L2][CO5]	[6M]
5	(a)	Classify the techniques to control deadlocks.	[L4][CO5]	[6M]
	(b)	Explain how recovery is done using undo logging and redo logging.	[L2][CO5]	[6M]
6	(a)	What is Deadlock recovery? Explain the different methods in deadlock.	[L2][CO5]	[6M]
	(b)	Explain in detail about Deadlock detection	[L2][CO5]	[6M]
7	(a)	What are the overview of physical storage media?	[L1][CO6]	[6M]
	(b)	Explain about failure with loss of non-volatile storage.	[L2][CO6]	[6M]
8	(a)	What are the classification of storage.	[L1][CO6]	[6M]
	(b)	Distinguish between fixed length records and variable length records.	[L5][CO6]	[6M]
9		Classify various levels of RAID with neat diagrams	[L4][CO6]	[12M]
10	(a)	what are the advantages and disadvantages of RAID system?	[L1][CO6]	[6M]
	(b)	Which level of RAID is best? Why?	[L2][CO6]	[6M]

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