<table>
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| Jun-12 | 1. Discuss the main characteristics of the database approach. How does it differ from traditional file systems.  
       | 2. Explain the component modules of DBMS and their interaction, with the help of a diagram. |
| Dec-11 | 1. Discuss the various component modules of a DBMS with a neat diagram.  
       | 2. Briefly explain the advantages of object oriented systems.  
       | 3. List and explain the main characteristics of database approach. |
| Jun-11 | 1. Discuss the main characteristics of the database approach and how it differs from traditional file system.  
       | 2. Discuss criteria used to classify database management system.  
       | 3. Define the terms: DDL, DML and DCL. Give examples. |
| Dec-10 | 1. Discuss the main characteristics of the database approach. How does it differ from traditional file systems?  
       | 2. Explain the difference between logical and physical data independence.  
       | 3. Explain the operation of two-tier client/server architecture for RDBMS. |
| Jun-10 | 1. Briefly discuss the advantages of using the DBMS.  
       | 2. Explain the component modules of DBMS and their interaction with the help of a diagram. |
Chapter 2

Jun-12

1. With a neat diagram, describe the three schema architecture of database systems.
2. Discuss with examples, different types of attributes.
3. Design an ER diagram for keeping track of information about a hospital database taking into account at least four entities.

Dec-11

1. Define and explain a partial key, with an example.
2. What is meant by recursive relationship? Bring out the importance of role names in recursive relationship, with an example.
3. Design an ER diagram for maintaining a movie database taking into account at least four entities.

Jun-11

1. What is the concept of a weak entity type used in data modeling? Define the terms owner entity type, weak entity type identifying relationship type and partial key.
2. Draw an ER diagram for a company database.

Dec-10

1. Design an ER diagram for keeping track of information about a bank database, taking into account at least 4 tuples.
2. Map the following scenarios in ER model to schema with suitable examples - 1. Strong entity 2. One-to-one relationship.

Jun-10

1. Define an entity and an attribute. Explain the different types of attributes that occur in an ER model, with an example.
1. What is a functional dependency? Write an algorithm to find the minimal cover for a set of functional dependencies.

2. Why normalization is required? Explain the first, second and third normal forms with an example.

1. Suggest and explain three different techniques to achieve INF using a suitable example.

2. Differentiate between prime and non-prime attribute, with an example.

3. Consider the relation R(A,B,C,D,E,F) and the FDA -> B,C ->DF, AC ->E , D->F.

   what is the key and highest normal form of R? If it is not 3NF find a decomposition that is lossless and dependency preserving.

1. Summarize the correspondences between ER model constructs and the relational model constructs.

2. What is a functional dependency? Who specifies the functional dependencies that hold among the attributes of relation schema.

3. Define first, second and third normal forms by taking an example.

1. Explain any two informal quality measures employed for a relational schema design.

2. Given a relation, recognize if it is 1nf, 2nf or 3nf. Why or why not? How would you normalize this completely.

3. Discuss the minimal sets of functional dependencies.

1. What is functional dependency? Write an algorithm to find a minimal cover for a set of functional dependencies.

2. What is need for normalization? Explain second normal form. Normalize a given relation into 2NF.
### Chapter 7

#### Jun-12

1. Explain multivalued dependency and fourth normal form, with an example.
2. What are ACID properties? Explain.
3. Write and explain two phase locking protocol.

#### Dec-11

1. Which normal form is based on the concept of multivalued functional dependency? Explain the same with an example.
2. Explain two phase locking protocol and its disadvantages.

#### Jun-11

1. What is meant by the attribute preservation condition on decomposition?
2. Discuss the null value and dangling tuple problems.
3. Define fourth normal form. Why is it useful?

#### Dec-10

1. What are the ACID properties? Explain each one.
2. What is serializability? How can serializability be ensured? Do you need concurrent execution of transactions to ensure serializability?
3. What is the phantom problem? Explain with an example.

#### Jun-10

1. Explain multivalued dependency and fourth normal form with an example.
2. Prove that a given decomposition of relation R has the lossless join property.
1. What is write-ahead logging? What is forced to disk at the time a transaction commits?
2. Write and explain time stamp based ordering algorithm.
3. Write a note on checkpointing.


2. Why is the two-phase locking protocol needed? How does it guarantee serializability?


1. Explain the problems that can occur when concurrent transactions are executed. Give examples.
2. Briefly discuss the two phase locking protocol used in concurrency control.