

**Arya College of Engineering**  
**Guess Paper (B.Tech IV sem, II Year)**

**Subject-DBMS**

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**UNIT 1**

**Short Answer Type**

1. What is a database system ?
2. What are the advantages of DBMS?
3. How many types of database languages are ?
4. What is data abstraction in DBMS? What are the three levels of data abstraction?
5. Discuss the history of database system.
6. What is data independence?
7. Define attribute and their types with suitable example.
8. Discuss the concept of generalization and specialization with the help of example.
9. Discuss the concept of aggregation.
10. Differentiate between strong and weak Entity.

**Long Answer Type**

1. Draw and explain the structure of DBMS.
2. Differentiate between file system vs DBMS.
3. Discuss various notations used in ER Diagram.
4. What is ER Model? How it is useful in designing a real world database.
5. Draw an ER Diagram for Railway Reservation System.
6. Discuss various types of data models in detail.

**UNIT 2**

**Short Answer Type**

1. Differentiate between Embedded SQL Dynamic SQL.
2. Define ODBC and JDBC.
3. What are aggregate functions? Explain each with the help of example.
4. What is trigger and active databases?
5. Discuss about set operations.
6. What do you understand by Quantifiers.

**Long Answer Type**

1. Explain fundamental operations of relational algebra with the help of suitable example.
2. Discuss types of join with the help of example.
3. Define Tuple Relational Calculus and Domain Relational Calculus.
4. Write short notes on- Rename, Division operations.
5. What do you understand by Nested Queries and Correlated Nested Queries.
6. Consider the following three relations with attributes shown in brackets for an organization

Employee (eno, ename, salary, dcode)  
Dept (dcode, dname)  
Dependent (dependentname, eno, relation)  
Primary keys are underlined.

Write SQL query for the following-

- (a) Find the number of employee in each department.
- (b) Find the average salary of complete organization.
- (c) Change the datatype of ename from varchar(30) to varchar(50)

### UNIT 3

#### Short Answer Type

1. Define Normalization? Why it is required?
2. What is functional Dependency? Explain its properties.
3. Name different types of Normal Forms.
4. Define Transitive dependency.
5. Define partial Dependency.
6. What are insertion, deletion and updation anomalies.
7. We have a relation R(A,B,C,D,E) and set of functional dependency are (A->B, B->C, C->, D->E), find closure of all attributes present in relation R and also find the candidate key for above relation.

#### Long Answer Type

1. Discuss all types of Normal forms with the help of suitable example.
2. What are keys in DBMS? Discuss all types of keys in detail.
3. Discuss the purpose of BCNF and describe how BCNF is different from 3NF.
4. Check the following relation is in 3NF or not, if not then decompose it into 3NF- R(A,B,C,D)  
Functional Dependency (AB->C, C->D)
5. Check the following relation is in 2NF or not, if not then decompose it into 2NF- R(A,B,C,D)  
Functional Dependency(AB->D, B->C)C
6. Check the following relation is in BCNF or not, if not then decompose it into BCNF- R(A,B,C)  
Functional Dependency(AB->C, C->B)

### UNIT 4

#### Short Answer Types

1. Define transaction and transaction states with the help of proper diagram.
2. Define ACID Properties.
3. What do you understand by Concurrent Execution in DBMS?
4. What is Serializability? What is the need of Serializability.
5. What is view Equivalent Schedule. How we check that schedule is view Equivalent or not.
6. Discuss how to check Conflict Equivalent.

#### Long Answer Types

1. Differentiate Conflict vs View Serializability.
2. Find Whether the given schedule is conflict serializable or not .

T1	T2	T3
R(X)		
		R(Y)
		R(X)
	R(Y)	
	R(Z)	
		W(Y)
	W(Z)	
R(Z)		
W(X)		
W(Z)		

3. Explain types of Schedules in detail.

## UNIT 5

### Short Answer Types

1. Define Deadlock.
2. Differentiate Shared Lock and Exclusive Lock.
3. Define undo and redo operations in DBMS.
4. Discuss about growing phase and shrinking phase.
5. Write short note on Database failure.

### Long Answer Types

1. Explain types of Concurrency Control Protocol in detail.
2. Explain Deadlock handling in detail.
3. Discuss Recovery Scheme in detail.
4. Write the timestamp ordering protocol. For the below schedule S with transactions T1,T2,T3, whether the timestamp order T1,T2,T3 will successfully execute the basic time stamp protocol?

T1	T2	T3
R(A)		
	R(B)	
W(C)		

		R(B)
R(C)		
	W(A)	
		W(A)