**Group 4**

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**Question 1**

1. **Enumerate any Four (4) disadvantages of using a database**

**High Initial Cost**:  
Setting up a database system can be expensive due to the cost of specialized software, hardware, and hiring skilled personnel.

**Complexity**:  
Database systems can be complex to design, implement, and manage, especially for large or enterprise-level systems.

**Security Risks**:  
Databases store critical and sensitive data. If not properly secured, they can be vulnerable to unauthorized access, hacking, or data breaches.

**Maintenance Overhead**:  
Regular maintenance is required, such as updates, backups, and performance tuning, which can be time-consuming and require technical expertise.

**B. Database design is the organization of data according to a database model involving classification of data and identifying interrelationships. Explain the steps involved in this procedure?**

Analysis (Requirements Gathering): Collect and document all necessary data requirements.

Design: Taking all the data requirements and organizing them into a structured format

Implementation: Create the database using the chosen DBMS discussed in the design stage.

Testing and Maintenance: Test the database with sample data and typical queries to ensure it meets requirements and perform efficiently

**C Explain the three (3) basic elements of E-R modeling?**

1. Entities: An entity is a real-world object or concept that can be distinctly identified and stored in the database.

2. Attributes: Attributes are the properties or characteristics that describe an entity.

3. Relationships: Definition: A relationship shows how two or more entities are related to each other.

**Question 2**

**iii) The term “Normalization” is used in databases. List any Four benefits resulting from normalizing data?**

Eliminates Data Redundancy:Normalization reduces duplication of data by organizing it into related tables, which saves storage space and improves efficiency.

Improves Data Integrity and Consistency: By storing each piece of data in only one place, normalization helps ensure that updates, deletions, and insertions are consistent across the database.

Enhances Query Performance and Simplifies Maintenance: Smaller, well-structured tables can be easier to maintain and query, especially when properly indexed.

Supports Data Scalability and Flexibility: Normalized databases are more adaptable to changes, such as adding new attributes or relationships, without major restructuring.

**iv) Differentiate between the use of Char (n) and varchar2 (n) in oracle database?**

CHAR(n) stores fixed-length character strings and pads shorter values with spaces up to the defined length n, while  
VARCHAR2(n) stores variable-length character strings and does not pad shorter values—only using space needed by the actual data.