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| **SESSION** | **NOV-DEC 2023** |
| **PROGRAM** | **BCA** |
| **SEMESTER** | **III** |
| **course CODE & NAME** | **DCA2102 & Database Management System** |
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**SET- I**

**1. What is a database. Differentiate between physical data independence and logical data independence. 10**

**Ans 1.**

**Understanding a Database**

A database is a structured collection of data held in a computer system. It is designed to efficiently store, retrieve, and manage information. Databases are pivotal in various applications, from simple systems like a contact list on a mobile phone to complex structures in large-scale businesses and governments. They provide a systematic way to organize, manage, and access data, which can include text, numbers, images, and more.

In a database, data is typically organized into Its Half solved only

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**2. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted.**

**Ans 2.**

**Introduction to E-R Diagram in Hospital Database Management**

In the context of a hospital's database management system, an Entity-Relationship (E-R) diagram serves as a crucial tool for visualizing the data structure and relationships between different entities like patients, medical doctors, tests, and examinations. This diagram aids in effectively managing and accessing data

**3. What is the goal of query optimization? Why is it important?**

**Ans 3.**

Query optimization is a critical component in the functioning of Database Management Systems (DBMS). Its primary goal is to enhance the efficiency and effectiveness of executing database queries. By optimizing queries, a DBMS can retrieve the requested data in the fastest and most resource-efficient manner. This is crucial in a world where data is growing exponentially, and the need for quick access to information is

Top of Form

**SET-II**

**4. Explain any two important properties of transactions that a DBMS must ensure to maintain data in the face of concurrent access and system failures.**

**Ans 4.**

**Properties of Transactions in DBMS**

Database Management Systems (DBMS) are pivotal in ensuring the integrity and consistency of data, especially in environments where concurrent access and system failures are common. To manage these challenges effectively, transactions in a DBMS are governed by certain fundamental properties, often referred to by the acronym ACID. These properties are Atomicity, Consistency, Isolation, and Durability. Among these, Atomicity and Durability are particularly crucial in maintaining data

**5. What is relational completeness? If a query language is relationally complete, can you write any desired query in that language?**

**Ans 5.**

Relational completeness is a concept pivotal to understanding the capabilities and limitations of query languages used in database management systems. To delve into this concept, it's essential to begin by exploring its roots in the realm of relational databases.

**Understanding Relational Databases**

Relational databases, conceptualized by

**6. Explain sort-merge strategy in external sorting with the help of example. 10**

**Ans 6.**

**Sort-Merge Strategy in External Sorting**

External sorting is a class of algorithms used for sorting massive amounts of data that cannot fit into a computer's main memory at one time. It involves sorting smaller chunks of data in-memory and then merging these sorted chunks. One of the most efficient external sorting algorithms is the sort-merge strategy. This strategy is particularly effective when dealing with large data sets stored on external storage