

B.C.A. 3<sup>rd</sup> Semester (Full & Reappear)

Examination, December - 2024

**INTRODUCTION TO DATABASE SYSTEMS**

**Paper -BCA-203**

*Time allowed : 3 hours*

*[Maximum marks : 80*

*Note: Question No. 1 is compulsory. Attempt five questions in total, the first being compulsory and select one question from each unit.*

1. (a) What is Data independence? 2
- (b) What is Data Abstraction? Explain by taking suitable example. 2
- (c) Differentiate between Data and Information. 2
- (d) Who are database designers? How are they different from Application developers? 2
- (e) What is conceptual modeling? 2
- (f) What are ER diagrams? 2
- (g) Define functional dependency. 2
- (h) Write the "INSERT" command of SQL by taking an examples. 2

**Unit - I**

2. What is Database system? How is Database system different from a traditional file-based system? Explain its components, advantages, and disadvantages in detail. 16

3. (a) What is a Database Management System? What are the main functions of a DBMS? Explain. 8
- (b) Write short note on the following : 2×4=8
  - (i) DBMS Languages
  - (ii) Database Administrator

**Unit - II**

4. (a) Explain the Three-level architecture of a DBMS. 8
- (b) What is data independence? Differentiate between logical Data independence and physical data independence. 8

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5. Differentiate between the following: 2×8=16
- (a) Centralized and Client-server architecture of DBMS.
- (b) Record-based and Object-based data models.

**Unit - III**

6. Write short note on the following : 2×8=16
- (i) Entity Relationship Model
- (ii) Role of Abstraction and Integration of Data in DBMS <https://www.mdustudy.com>
7. What are data models? Explain Hierarchical, Network and Relational Data models in detail. 16

**Unit - IV**

8. (a) What is relational Algebra? Explain in detail. 8
- (b) What are Normal forms? Explain the different Normal Forms in detail with the help of examples. 8

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9. (a) What is Query Processing? How do we optimize a query? Explain its algorithms. 8
- (b) What is SQL? Explain the various types of SQL commands. 8

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