MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCAC401 Data Base Management System

UPID : 4000101

Time Allotted : 3 Hours *Full Marks :70*

The Figures in the margin indicate full marks.

Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following : [1 x 10 = 10]

(I) Give two examples of DML commands.

(II) Who introduced the Relational Model?

(III) What are the types of ordered indices?

(IV) Which schema provides a logical view of the database?

(V) What does DBMS stand for?

(VI) What is a multivalued attribute?

(VII) What is an entity?

(VIII) What is a table in SQL?

(IX) What is redundancy in a database?

(X) What is hashing in databases?

(XI) What is serializability in a database?

(XII) What is a candidate key?

Group-B (Short Answer Type Question)

Answer *any three* of the following : [5 x 3 = 15]

2. What is the SELECT (σ) operation in Relational Algebra? Explain with an example. [5]
3. What is Mapping Cardinality in an E-R Model? Explain with examples. [5]
4. What is Functional Dependency? Give an example. [5]
5. What is a Secondary Index? How is it different from a Primary Index? [5]
6. What are Aggregate Functions in SQL? Explain with examples. [5]

Group-C (Long Answer Type Question)

Answer *any three* of the following : [15 x 3 = 45]

7. (a) What is the JOIN operation in Relational Algebra? Explain with an example. [5]
   (b) What is the Division (÷) operation in Relational Algebra? Explain with an example. [5]
   (c) What is Outer Join? Explain its types with examples. [5]
8. Explain the concept of DDL and DML in SQL with examples. How do they contribute to database management? [15]
9. (a) Who is a Database Administrator (DBA)? Explain their roles and responsibilities. [5]
   (b) Describe different types of database users in DBMS. [5]
   (c) What is Data Abstraction in DBMS? Explain its three levels. [5]
10. (a) Compare Primary Index, Dense Index, and Sparse Index in terms of structure, performance, and storage overhead. Provide an example for each. [9]
    (b) Explain the difference between B-tree and B+ tree indexing. Why is B+ tree preferred in database indexing? [6]
11. (a) Explain Strong and Weak Entities with examples. [5]
    (b) Explain the steps in database design using the E-R Model. [5]
    (c) Why is the E-R Model needed? What are its advantages? [5]

*** END OF PAPER ***