Seat Number :- _____

Duration :-2.5 Hours G211NFDMS [Total Marks]:- 75

N.B.:

(1) All questions are compulsory.
(2) Make suitable assumptions wherever necessary and state the assumptions made.
(3) Answers to the same question must be written together.
(4) Numbers to the right indicate marks.
(5) Draw neat labeled diagrams wherever necessary.
(6) Use of Non-programmable calculators is allowed.

Q.1 Attempt Any three **(15)**

1. Explain DBMS Architecture.
2. What is Relational model and Relational database ? .
3. Explain Selection and Projection Operation in relational Algebra.
4. Explain the Advantages of DBMS.
5. Explain Entity Relationship model (ER).
6. Explain the terms.

a) Tuple c) Attribute
b) Record d) Primary Key e) Foreign key

Q.2 Attempt Any three **(15)**

1. Explain normalization. Explain three different normal forms.
2. What is functional dependency? Explain in detail.
3. Explain the distinctions among the terms primary key, candidate key, and super key.
4. 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.
5. Explain Third Normal form using a table example.
6. What is Referential Integrity?

Q.3 Attempt any three **(15)**

1. What are Joins? Explain different types of joins in detail.
2. Write the difference between left outer join and Right Outer join.
3. Explain Aggregate functions in detail.
4. Explain different DDL commands.
5. Write a query for creating an Employee table and inserting values in it. Employee table should have at least 5 attributes and the EID should contain a Primary Key.
6. Explain DML commands.

Q.4 Attempt any three **(15)**

1. Explain what are views? Give an example.
2. What is the difference between horizontal view and vertical view?
3. Explain what an index is ?
4. Why do we use hashing? Explain different types of Hashing.
5. What is optimization in query processing?
6. Explain the term SubQuery.

Q.5 Attempt any three **(15)**

1. What is concurrency control?
2. What are ACID properties?
3. Explain two phase locking (2 PL).
4. Explain various types of Locks.
5. What is a deadlock in Transaction Management ?
6. Explain different states of transactions with Diagram.

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