2020

COMPUTER SCIENCE — GENERAL

Paper : DSE-A-1

[Database Management System (DBMS)]

Full Marks : 50

The figures in the margin indicate full marks.

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

Day 3

Answer *question no.* **1** and *any four* questions from the rest.

1. Answer *any five* questions : 2×5

   (a) What is foreign key in relational database?

   (b) What is Data dictionary?

   (c) What are the different mapping cardinalities?

   (d) What is database schema?

   (e) What is query in DBMS?

   (f) What is candidate key?

   (g) Why is a relation normalized in DBMS?

   (h) What is functional dependency?

2. Discuss the main characteristics of database storage. How does it differ from traditional file system based storage? 5+5

3. (a) What are the responsibilities of the Database Administrator?

   (b) What is the difference between Logical and Physical data independence? 5+5

4. Explain the difference between the following with suitable example :

   (a) Strong entity and Weak entity.

   (b) Specialization and Generalization. 5+5

5. (a) Draw an ER diagram for library management system.

   (b) Specify the assumptions and mapping cardinality. 5+5

Please Turn Over

6. Give a relation which is in 2NF but not in 3NF. Convert this relation to 3NF. 5+5

7. (a) In what sense does relational algebra differ from relational calculus?

    (b) Mention any two operations of relational algebra with suitable example.

    (c) Why SQL is called a relationally complete language? 3+4+3

8. (a) Derive division operation using basic relational algebra operations.

    (b) Explain with example select and project operations of relational algebra. 4+6

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