2021

COMPUTER SCIENCE — GENERAL

Paper : DSE-A-1

(Database Management System)

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.*

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

1. Answer **any five** questions of the following : 2×5

   (a) Define domain of a relation.

   (b) What is the function of referential integrity?

   (c) Define superkey with example.

   (d) What do you mean by prime attribute of a relation schema?

   (e) Define lossless decomposition.

   (f) What is meant by specialization?

   (g) Explain intersection operation with an example.

   (h) Write any 2 command names for DDL and DML both.

2. (a) Explain the three schema architecture.

   (b) Write the differences between file processing system and database management system.

   (c) Define schema. 5+4+1

3. (a) What are represented by a double rectangle and ellipses in a E-R diagram?

   (b) Differentiate between superkey and candidate key with example.

   (c) Consider a database used to record the marks that students get in different exams of different course offerings. Construct an E-R diagram that models exams as entities, and uses a ternary relationship, for the above database. 2+3+5

4. (a) Explain Cartisian product and projection with example.

   (b) Write short note on equi-join and natural join. (2½+2½)+ (2½+2½)

Please Turn Over

5. (a) Differentiate between 'having' and 'where' clause with suitable example.

    (b) Why are duplicate tuples not allowed in a relation?

    (c) Why SQL is called a relationally complete language?   (2+2)+3+3

6. (a) What is metadata?

    (b) Explain many to many and one to many relationship with example.

    (c) What is a weak entity type? How this is denoted in ER diagram? How the entities are identified?

                                                             1+4+5

7. (a) Briefly describe 3NF with an example.

    (b) How is BCNF stronger than 3NF?

    (c) Normalise the following relation to 1NF :

    Project

P-ID	P-Name	Cities
P001	A	{XX, YY, ZZ}
P015	B	{XX, ZZ}
P107	C	{YY}

                                                                 3+2+5

8. (a) Write the difference between delete and truncate command.

    (b) Briefly explain the role of DBA.

    (c) What is data dictionary?

    (d) Give examples for single valued and multivalued entity.   2+3+3+2