

**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 Cartesian 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

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