

**2021**

**STATISTICS — HONOURS**

**Paper : SEC-B-2**

**(Database Management Systems)**

**Full Marks : 80**

*The figures in the margin indicate full marks.*

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

1. Answer **any fifteen** questions : 2×15
- (a) What is degree of relation?
  - (b) What do you mean by unary operations?
  - (c) Define logical data independence.
  - (d) What is data abstraction in DBMS?
  - (e) Define a relation schema and a relation.
  - (f) What are tables and fields in the database?
  - (g) What is Data Control Language?
  - (h) Define primary key and super key.
  - (i) Write an SQL query to find names of students starting with 'S'.
  - (j) What is the difference between NULL value and zero?
  - (k) When do we use intersect operation? Explain with syntax and example.
  - (l) Write the update command in SQL to increase the marks of each student in the Statistics department by 10%, using university schema.
  - (m) What is subquery in SQL?
  - (n) How do you communicate with an RDBMS?
  - (o) What are the types of operators available in SQL?
  - (p) What do you mean by cloud database?
  - (q) Explain the syntax to create a view with the help of an example.
  - (r) What is view in SQL?
  - (s) Define procedural and non-procedural DML.
  - (t) Describe theta join with example.

**Please Turn Over**

2. Answer **any six** questions:

5×6

- (a) What is DBA? Explain various roles and responsibilities of DBA.
- (b) What is DDL? How is it different from DML? Briefly explain procedures for creation of table.
- (c) Explain the different levels of data abstraction by example.
- (d) What are integrity constraints? Explain different types of integrity constraint with the help of an example.
- (e) What is SQL? Explain its different data types.
- (f) Explain the use of standard aggregate functions in SQL.
- (g) Explain the ACID property in a database.
- (h) With the help of example, explain various set operations in SQL.

3. Answer **any two** questions :

10×2

- (a) What are data models? Compare and contrast hierarchical, network and relational models.
  - (b) What are the advantages of DBMS over file-based system? Differentiate between DBMS and RDBMS.
  - (c) Consider 'Library Management System' which has the following tables:  
Book (isbn\_no, title, author, publisher, edition, year, price, subject)  
BookAccess (access\_no, isbn\_no, purchase\_date)  
Member (m\_name, m\_id, m\_address, m\_phone)  
IssueReturn (access\_no, m\_id, expected\_return\_date, actual\_return\_date)  
Specify the following queries in SQL:
    - (i) Find m\_id and m\_name of the members who have got at least one book issued to themselves.
    - (ii) List the book details for the books which were purchased after January 2020.
    - (iii) List all the books on subject "Statistics". This list should be sorted on author's name.
    - (iv) Find the members who have not got any book issued.
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