বিদ্যাসাগর বিশ্ববিদ্যালয়

VIDYASAGAR UNIVERSITY

B.Sc. Honours Examination 2021

(CBCS)

4th Semester

STATISTICS

PAPER—SEC2T

DATA BASE MANAGEMENT SYSTEM

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

THEORY : SEC2T

Answer any *two* questions. 2×15

1. (a) Discuss the following terms with examples related to SQL:

(i) Inner join

(ii) Right join

(iii) Left join

(iv) Full outer join

b) Give two reasons why null values might be introduced into a database.

(c) Give four significant advantages of DBMS over a file-processing system . 8+2+5

2. (a) Give examples of one to one, one to many and many to one relations using ER diagrams

(b) Consider an employee database with two relations

*employee (**employee_ID**, employee_name, address, city)*

*works (**employee_ID**, employee_name, company_name, salary)*

where the primary keys are underlined.

(i) Write a function avg_salary that takes a company name as an argument and finds the average salary of employees at that company.

(ii) Write an SQL statement, using the function in i), to find companies whose employees earn a higher salary, on average, than the average salary at "Union Bank".

(c) Distinguish between the terms "Super key", "Candidate key" and "Primary key" with examples. 5+4+6

3. (a) Suppose a office database contains information about employees (identified by social security number or SSN) and departments (identified by department id or DID). Employee works in various departments. Draw an ER diagram to describe the ``works in'' relationship between employees and department. Now a new set data consisting of place of posting of the employees added. Use ER diagram to express the relationship.

(b) Explain three levels of data abstraction using examples.

(c) For the following table write an SQL statement for printing the rows which have 'Yellow' in one of the columns C1, C2, or C3, but without using "**OR**".

ID	C1	C2	C3
1	Red	Yellow	Blue
2	NULL	Red	Green
3	Yellow	NULL	Violet

(d) What is subquery in SQL? 4+6+3+2

4. (a) Consider a database used to record the marks that students get in different

exams of different course offerings (sections)

Construct an E-R diagram that models exams as entities, and uses a ternary relationship, for the database.

(ii) Construct an alternative E-R diagram that uses only a binary relationship between student and section. Make sure that only one relationship exists between a particular student and section pair, yet you can represent the marks that a student gets in different exams.

(b) What is relationship set?

(c) Explain weak entities. 10+2+3

Answer any *one* question. 1×10

5. (a) Suppose a relation is given as marks (ID, Name, Score) and it is required to assign grades to students as follows:

Score	Grade
Less than 40	F
Greater than or equal to 40 and less than 60	C
Greater than or equal to 60 and less than 80	B
Greater than or equal to 80	A

Write SQL queries for the following:

(i) Display the grade for each student based on the relation marks.

(ii) Find the number of students in each grade

(b) What is the difference between the WHERE and HAVING clauses in SQL ? 5+5

6. Consider the following car insurance database where the primary keys are underlined.

*person(**driver_id**, name, address)*

*car (**car_number**, model, year)*

*accident (**report_number**, date, location)*

*owns(**driver_id**, car_number)*

*participated(**report_number**, car_number, driver_id, damage_amout)*

Write SQL statement for this relational database:

(i) Find the total number of people who owned cars that were involved in accidents in 2017.

(ii) Add a new accident to the database assuming the values ("B62156", "20/02/2018", "Kolkata")

(iii) Find the number of accidents in which the cars belonging to " Ajit Roy" were involved.

(iv) List all the car of Maruti with its owner, car number.

2+3+3+2