

Roll No.

Total No. of Questions : 09]

[Total No. of Pages : 02

Paper ID [CS305]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 5th)

DATABASE MANAGEMENT SYSTEM (CS - 305)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A

(10 × 2 = 20)

Q1)

- a) What is physical data independence?
- b) What do you mean by data redundancy?
- c) What are single-valued and multivalued attributes?
- d) What is statistical database security?
- e) What do you mean by database schema?
- f) Define the term data manipulation language.
- g) What do you mean by the term deadlock?
- h) What are graphical user interfaces?
- i) What do you understand by a distributed database?
- j) What is serializability of schedules?

Section - B

(4 × 5 = 20)

Q2) Draw an ER diagram for a library management system, make suitable assumptions.

Q3) Explain the difference between physical and logical data independence.

Q4) Define the concept of aggregation. Give two examples of where this concept is useful.

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- Q5) Describe the differences in meaning between the terms relation and relation schema with the help of suitable examples.
- Q6) Compare the shadow-paging recovery scheme with log-based recovery schemes.

Section - C

(2 × 10 = 20)

- Q7) (a) Explain the distinctions among the terms primary key, candidate key and superkey.
(b) What is normalization? Discuss various normal forms with the help of examples.
- Q8) (a) Discuss the basic operations that can be performed using relational algebra and SQL.
(b) Consider the following employee database, where the primary keys are underlined.

Employee (employee-name, street, city)

Works (employee-name, company-name, salary)

Company (company-name, city)

Managers (employee-name, manager-name)

Give an expression in SQL for each of the following queries.

- Find the names of all employees who work for First Bank Corporation and live in Las Vegas.
- Find the names, street addresses and cities of residences of all employees who work for First Bank Corporation and earn more than \$10000.
- Find all employees who do not work for First Bank Corporation.
- Find the company that has the smallest payroll.
- Find all employees in the database who do not live in the same cities and on the same streets as do their managers.

Q9) Write short notes on the following:

- Multiple Granularity.
- Transaction Processing Systems.
- Advantages of DBMS.

