

EVENING

23 MAR 2021

[Total No. of Questions: 09]

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Uni. Roll No.

Program/ Course: B.Tech. (4th Semester)

Name of Subject: Database Management System.

Subject Code: IT-14401

Paper ID: 15333

Time Allowed: Hours

Max. Marks: 60

NOTE:

- 1) **Section-A is compulsory**
- 2) Attempt any **four** questions from **Section-B** and any **two** questions from **Section-C**
- 3) Any missing data may be assumed appropriately

Section – A

[Marks: 02 each]

Q1.

- a) What are data marts?
- b) Difference between physical and logical independence?
- c) Who is data Administrator? What is his job?
- d) How NoSql is different from Sql?
- e) Differentiate primary key and candidate key with example.
- f) Give one example for each Relationship: One to Many, One-One, Many-Many, Many-One
- g) What are different types of failures in system?
- h) Differentiate full functional dependency and partial functional dependency.
- i) What is query optimization?
- j) Draw a life cycle of a Transaction.

Section – B

[Marks: 05 each]

Q2. Differentiate log-based recovery and shadow page recovery?

Q3. Explain two phase locking protocol with example.

Q4. Convert following schema to 3NF, showing all intermediate stages that is 1NF and 2NF

BRANCH (Branch#, Branch_Addr, (ISBN, Title, Author, Publisher, Num_copies))

Q5. Explain file indexing in detail?

Q6. Differentiate DDL, DML and DCL. Consider student table for example and give at least one query example for each component of SQL.

Section – C

[Marks: 10 each (05 for each sub-part, if any)]

Q7. Consider the following database

employee (person name, street, city)

works (person name, company name, salary)

company (company name, city)

Answer following queries using relational algebra.

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- a) Find the names of all employees who live in city 'Miami'.
 - b) Find the names of all employees whose salary is greater than \$100,000.
 - c) Find the names of all employees who live in 'Miami' and whose salary is greater than \$100,000.
 - d) Find the names of all employees who work for "First Bank Corporation".
 - e) Find the names and cities of residence of all employees who work for "First Bank Corporation".
- Q8. a) What are advantages of data warehouse? Write at least five advantages. How data warehouse is related to data mart?
- b) What is data mining process? Give five applications of data mining with brief discussion of each.
- Q9. a) Discuss NoSql Databases
- b) Draw a E-R diagram for car insurance company using suitable entities and attributes.
