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6th Semester **B. Tech. [MC]**

Mid Semester Examination *(March-2019)*

MC302 Database Management System

Time 1h* 30 min.** ***Max. Marks: 30

NOTE: ***Attempt all Questions. Assume suitable missing data if any.***

Q1. A) What is the difference between primary key and unique constraints? [2]

B) What is the difference between delete and truncate command in SQL? [2]

C) What are the disadvantages of DBMS (any two)? [2]

D) Explain different data anomalies with example. [4]

Q2. Consider the following database schema to write queries in SQL

Supplier (Sid, name, city) [2 * 2.5 = 5 marks]

Parts (pno, pname, pdescription)

Supply (Sid, pno, cost)

i) Find the names of the parts supplied by "RamRaj".

ii) Find the cheapest cost of every part. You can use part number (pno).

Q3. A university registrar's office maintains data about the following entities:

a) Courses, including number, title, credits, syllabus, and prerequisites;

b) Course Offerings, including course number, year, semester, section number, instructor(s), timings, and classroom;

c) Students, including student-id, name, and program;

d) Instructors, including identification number, name, department, and title.

Further, the enrollment of students in courses and grades awarded to students in each course they are enrolled for must be appropriately modeled. Construct an E-R diagram for the registrar's office. Document all assumptions that you make about the mapping constraints. [6 marks]

Q4. For each of the following relations, tell which normal form it is (none, 1NF, 2NF, 3NF, or BCNF) and why? If it is less than 3NF, give an equivalent 3NF schema. [2 * 2 = 4 marks]

A) **Rentals** [SailorId, SailorName, BoatId, Date]

[SailorId, BoatId, Date] is the primary key.
SailorId → SailorName.

b) Customers [Id, Name, Address, PhoneNumber]
PhoneNumbers is a comma-delimited list. Id and Name are keys.
There are no other FDs.

Q5. Suppose we have a database for an investment firm, consisting of the following attributes: [2 * 2.5 = 5 marks]

B – Broker, O – Office of a broker,

I – Investor, D – dividend paid by a stock,

Q – Quantity of stock owned by an investor, S – Stock.

Hence, the overall schema is R = (B, O, I, S, Q, D).

Assume that the following FDs are required to hold on this database

I → B, IS → Q, B → O, S → D.

1) List all the candidate keys for R.

2) Give a lossless-join decomposition of R into 3NF preserving FD.

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