Question Paper

MANIPAL UNIVERSITY

SCHOOL OF INFORMATION SCIENCES
FIRST SEMESTER MASTER OF ENGINEERING - ME (EMBEDDED SYSTEMS AND INSTRUMENTATION)
DEGREE EXAMINATION - NOVEMBER 2017
DATE : Monday, November 20, 2017
TIME : 10:00AM - 1:00PM
Database Management Systems [ESI 617.1]

Marks: 100   **Duration: 180 mins.**

ELECTIVE 2

Answer all the questions.

1) Write Shot Notes on   (10)
    a. Data models
    b. ER model with an example

2) Discuss briefly DDL, DSDL, DML and 'Procedural &   (10)
    Nonprocedural' languages

3) Consider a university database for the scheduling of   (10)
    classrooms for final exams. This database could be
    modelled as the single entity set exam, with attributes
    course-name, section-number, and time. Alternatively, one
    or more additional entity sets could be defined, along with
    relationship sets to replace some of the attributes of the
    exam entity set, as

    - Course with attributes name, department, and c-number,
    - Section with attributes s-number and enrolment, and dependent as a weak entity set on course.
    - Room with attributes r-number, capacity, and building

    (a)Show an E-R diagram illustrating the use of all three
    additional entity sets listed.
    (b)Explain what application characteristics would influence
    a decision to include or not to include each of the
    additional entity sets.

4) Define the following terms   (10)

    a) Entity set

b) Relationship
c) Derived attributes
d) Composite attributes

5) Briefly Discuss Extended Relational-Algebra-Operations (10)

6) Consider a database with the following relations (10)

loan (loan-number, branch-name, amount)
customer (customer-name, customer-street, customer-city)
depositor (customer-name, account-number)
borrower (customer-name, loan-number)
account (account-number, branch-name, balance)
branch (branch-name, branch-city, assets)

Write SQL query statements for following operations

a) Find the names of all branches where the average account balance is more than $1,200.

b) Find all customers who have both an account and a loan at the bank(Use in construct).
c) Find all customers who have a loan at the bank but do not have an account at the bank (Use in construct)
d) Find all branches that have greater assets than some branch located in Brooklyn(Use some construct)
e) Find the names of all branches that have greater assets than all branches located in Brooklyn(Use All construct)

7) Briefly Discuss in SQL (5 + 5 MARKS) (10)
i. Integrity constraints in Create
Table
ii. Drop and Alter Table constructs

8) List transaction states and explain each of them (10)

9) Answer following (10)
   a) Explain the importance of Database Normalization.
(4 marks)
   b) Discuss 1NF, 2NF, 3NF with appropriate example
(6 Marks)

10) Explain implementation of Atomicity and Durability using the shadow-database scheme (10)

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