151

B.Sc.Engg./HD CSE 3rd Semester (52) 27 February 2012 (Afternoon)

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
Department of Computer Science and Engineering (CSE)

MID SEMESTER EXAMINATION **WINTER SEMESTER, 2011-2012**
DURATION: 1 Hour 30 Minutes **FULL MARKS: 75**

CSE 4307: Database Management Systems

Programmable calculators are not allowed. Do not write anything on the question paper.
There are **4 (four)** questions. Answer any **3 (three)** of them.
Figures in the right margin indicate marks.

---

1. a) What is a *Database Management System*? Discuss the various levels of data abstraction in database system. 5

   b) Describe the drawbacks of traditional file-processing system. What are the advantages of database system over file based system? 8+2

   c) Briefly explain *DDL* and *DML*. Discuss different types of data models. 4+6

2. a) What is *Relational Algebra*? What are the fundamental relational algebra operations? 5

   b) Consider the following relational database, where the primary keys are given. Give an expression in the *relational algebra* to answer each of the queries: 5X4

   Student (Std_id, Std_name, Dept_name), //primary key- Std_id
   Instructor (Ins_id, Ins_name, Dept_name, Salary), //primary key- Ins_id
   Course (Course_id, Title, Dept_name, Credit), // primary key- Course_id
   Teaches (Ins_id, Course_id, Sec_id, Semester, Year), // primary key- {Ins_id, Course_id, Sec_id, Semester, Year}

   i. Find the titles of courses in CSE department that have 3 credits.
   ii. Find the names of all students who are not from CSE department.
   iii. Find the set of all course ids taught in the summer 2009 semester, the winter 2010 semester or both.
   iv. Find the highest salary in the institution.
   v. Find the names of all instructors in CSE department together with the course titles of all courses those they teach.

3. a) Discuss basic domain types that are used in SQL. 5

b) Consider the following relational schema where the primary keys are given. 4X5

Book (book_id, title, publisher_name, year), // primary key-book_id
Author (author_id, author_name, city), // primary key- author_id
Publisher (publisher_name, city), // primary key-publisher_name
Wrote (book_id, author_id), // primary key- {book_id, author_id}
Write the following queries in SQL.

i. Find the titles and years of all books written by the author named J.K.Rowling.
ii. Find the unique names of all authors who live in Harrison city and whose book was published by McGraw-Hill.
iii. Find the names of all publishers in the city of Brooklyn and the number book that they published in the decade beginning in 2000 and ending in 2009.
iv. Find the unique names of all authors who have a co-author named "Brown".

4. a) Define *database schema* and *database instance*. 2

b) What are the applications of database-system? 5

c) What is *view*? Explain briefly why it is used in SQL with appropriate example. 8

d) Discuss different types of keys that are used in database with appropriate example. 10