Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104

(Constituent College of Manipal University)

FOURTH SEMESTER B.TECH DEGREE END SEMESTER EXAMINATION, MAY – 2016
SUBJECT: OPEN ELECTIVE I - INTRODUCTION TO DATABASE SYSTEMS – ICT 350
(REVISED CREDIT SYSTEM)
17-05-2016

TIME: 3 HOURS **MAX. MARKS: 50**

Instructions to candidates

- Answer any **FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

1A. Consider the following Sales database:
Product (P_code, Description, Product_name,item_id)
Sales(Trans_id,P_code,item_id)
Here item_id can be same across all products.
Write SQL queries for the following:
a) Write the DDL statement for Sales relation.
b) Display the descriptions of product with product code ”PR1”.
c) Display the product names bought in transaction “T10”.
d) Find the number of items in each transaction.

1B. Illustrate “with” clause with an example.

1C. Give examples for the following:
a) Pattern matching using “Like”
b) Concatenation of String operations

(5+3+2)

2A. Given R(P,Q,U,S,T) with the set of FDs,
F= { PQ→US, PQU → T, U→P}
a) Find candidate keys of R
b) What is the normal form of R? Justify.

2B. Let R = (P, Q, R,S,T,U) and F = { P → Q, P → R, RS → T, RS → U, Q → T}. Find F+.

2C. List the order of execution of different clauses in SQL with example.

(5+3+2)

3A. Mention the aggregate functions and set operation in SQL with an example for each.

3B. Explain the concept of participation constraints with an example for each.

3C. Illustrate with an example “scalar sub queries”.

(5+3+2)

4A. Elaborate along with a diagram on overview of design process in database design.

4B. Differentiate between natural join and Cartesian product between two relations with an example.
Consider the Train_Reservation database:
Station (code, name, city)
Train (number, strt_city_code,end_city_code)
Reservation (number, seat_number, date, passenger_name, passenger_id)
Answer the following using relational algebra
a) List the train numbers of the trains that depart from Chennai to Bengaluru.
b) List the passengers who are on Train number “12678” boarded from “UDU”.

4C. Recovery is important during transaction, Justify.

(5+3+2)

5A. Define (i) Binary Locks (ii) Shared exclusive lock. How serializability can be guaranteed using two phase locking? Explain with an example.
5B. Illustrate with example i) Descriptive attributes ii)Recursive Relations iii) Binary Relationships
5C. What is a Functional Dependency? Give an example.

(5+3+2)

6A. What are transaction processing systems? Explain single user and multi user database systems
6B. Let FD1={P→Q, PQ→R, S→PR, S→T} and FD2={P→QR, S→PT}. Are they equivalent?
6C. Draw the different states during a transaction in a transaction processing system

(5+3+2)