2006 VISVESVARAYA TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.E DEGREE EXAMINATIONS

DATA BASE MANAGEMENT SYSTEM

(INFORMATION TECHNOLOGY, COMPUTER SCIENCE ENGINEERING)

JANU / FEBRU 2006

TIME: 3 HOUR
MAXIMUM MARK :100

Note: 1. Answer any Five full questions.

1. (a) A bank has many branches the bank has many customers. A customer can open many different kinds of accounts with the bank. Any customer of the bank can take loan from the bank. All branches can give loans, Banks have also installed automatic teller machines, from which a customer can withdraw from his/her bank. Draw the ER diagram for the bank. Create 3 NF tables of your design. Make suitable assumptions, if any.

(b) Describe the various functions which are required to be performed by the data base administrator..

(c) What are the disadvantages of database system? Explain them briefly.

2. (a) What is a participator role? When is it necessary to use role names in the description of relationship types?

(b) Discuss the naming convention used for ER schema diagram.

(c) What is the FUNCTION operation? What is it used for?

3. (a) In relational algebra, discuss some types of quenes for which renaming is necessary in order to specify the query unambiguously.

(b) Consider the two tables T1 and T2 show the result of the following operations:

i) T1 ¥ T1.P=T2.A T2

ii) T1 ¥ T1.Q=T2.B T2

iii) T1 = ¥ T1..P=T2.A T2

iv) T1 ¥=T1.Q=T2.R T2

v) T1 È T2

vi) T1 ¥ (T1..P=T2.A and T1.R=T2.C) T2
Table T1
Table T2

4. (a) Consider the following relations for a database that keeps track of business trips of sales persons in a sales office.
SAILOR (SID, SNAME, RATING, AGE) BOATS (BID, BNAME, COLOR) RESERVES (SID, BID, DAY)
Specify the following queries in SQL and in relational algebra

i) Find the names of sailors who have reserved a red boat.

ii) Find the names of sailors who have reserved a red or a green boat.

iii) Find the names of sailors who have reserved all boats called 'Interlake'

(b) How do the relations (tables) in SQL differ from the relations defined formally? Discuss the differences in terminology. Why does SQL allow duplicate tuples in a table or in a query result?

5. (a) Discuss insertion, deletion and modification anomalies. Why are they considered bad? Illustrate with examples.

(b) Consider the universal relation R = {A, B, C, D, E, F, G, H, I, J} and the set of functional dependencies
F = {{A, B} ® {C}, {A} ® {D, E} {B}® {F}, {F} ® {G, H}, {D} ® {I, J}.
What is the key for R? Decompose R into 2NF, then 3NF relations

(c) Discuss the problem of spurious tuples and how we may prevent it.

6. (a) What is serialisablility? How can serialisability be ensure? Do you need to restrict concurrent execution of transaction to ensure serialisability? Justify your answer. Give an example of transactions and how you can force serialisability

in those transactions.

(b) What are the steps one must take with its database management system, in order to ensure disaster recovery? Define the process of recovery in case of disaster.

7. (a) What is two phase locking? Describe with help of an example. Will two phase locking result in serialisable schedule? Will two phase locking result in deadlock? Justify your answer with the help of an example.

(b) What is shadow paging scheme? Where is it used?

(c) What is the multiversion technique of concurrency control? Describe with the help of an example. Will this scheme result in rollback and /or deadlock? Justify your answer.

8. (a) What is time stamping? Explain a mechanism of concurrency control that uses time stamping with the help of an example.

(b) What is intention made locking? Describe the various intention mode locks with the help of an example.