



RN-8071

B. E. II (Sem. III) (CO/IT) Examination
May / June – 2010
Database Management System

Time : Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दर्शाविए निशान्तीवाणी विगतो उत्तरवडी पर अवश्य लखवी.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
B. E. 2 (Sem. 3) (CO/IT)

Name of the Subject :
Database Management System

Subject Code No. : **8 0 7 1** Section No. (1, 2,.....): **1&2**

Seat No. :

Student's Signature

- (2) Make and state necessary assumption.
(3) Write answer of each section in separate answer sheets.
(4) Figures to right indicate full marks.

SECTION – I

Q.1 [A] Do as directed [04]

1. State TRUE or FALSE : Project Join Normal Form is also called 5NF.
2. State TRUE or FALSE : Only one primary key is allowed per table.
3. The select, project and rename operations are called _____ operation in relational Algebra.
4. _____ interprets DDL statements and records the definitions in the data dictionary.

[B] Define following terms.

1. Data Dictionary [06]
2. Instance and Schema
3. Functional Dependency

[C] Construct an SQL query for given database as shown below. (Any five) [10]

Sailors(Sid, Sname, Rating, Age)

Boats (Bid, Bname, Color)

Reserves (Sid, Bid, Day)

1. Find the name of sailors who have reserved both blue and green boats.
2. Find the name of sailors who have reserved at least one boat.
3. List the name and age of sailors in ascending order of name.
4. Find the sailors with highest rating.
5. Find the Sid of all sailors who have reserved red boat.
6. Find total no. of boats reserved on Monday.
7. Write syntax for creating tables Sailors and Reserves where Sid is primary key in Sailors and Sid is foreign key in Reserves.

Q. 2[A] Discuss BCNF vs. 3NF. **[05]**

[B] What are five main functions of Database Administrator? **[06]**

[C] Consider the relation schema R (A, B, C, D, E, F, G) and set of functional dependencies holds on relation as follows. **[04]**

$A \rightarrow B$
 $BC \rightarrow DE$
 $AEF \rightarrow G$

Find attribute closure $(AC)^+$.

OR

Q. 2[A] Enlist and Explain Armstrong Axioms. **[05]**

[B] Describe applications of DBMS. **[06]**

[C] Suppose that we decompose the schema R(A, B, C, D, E) in to (A, B, C) and (A, D, E). **[04]**

Show that this decomposition is a lossless decomposition if the following sets F of functional dependencies are holds.

$A \rightarrow BC$
 $CD \rightarrow E$
 $B \rightarrow D$
 $E \rightarrow A$

Q. 3[A] Answer following. (Any three) **[15]**

1. Explain different data models.
2. Draw database system architecture.
3. Explain cursor in PL/SQL.
4. Explain DML and its types.
5. Explain super key, candidate key, Primary key and Foreign key for relation schema.

SECTION – II

Q.4 [A] Answer in brief : (Any five) **[10]**

1. Define equivalence rules.
2. What do you mean by discretionary control?
3. Explain Checkpoints in brief.
4. How do you define Compatibility function on locks?
5. State difference between super key and candidate key.
6. Define commit and rollback in transaction

[B] Consider the following set of requirements for a Company database. **[10]**
Design an ER diagram for this application:

A COMPANY has number of departments. A Department has name, number, and manager. We keep track of starting date of a department manager.

A Department has several locations. The department controls a number of projects. A Project has name, number and located at a single location.

Employee has name, social security, number, address, salary, sex, birthdate. Employee is in one department but may work on several projects. We consider number of Hours each employee works on each project. An Employee has a supervisor. An Employee has dependents with name, sex, birthdate, and relationship to employee.

Q.5 [A] Define view serializability. Determine if following schedule is view serializable or not (Give proper reasons): [07]

T1	T2	T3
Read(Q)		
Write(Q)		
		Write(Q)

[B] Attempt any Two: [08]

1. Explain aggregation with example.
2. How do you handle hash table overflow?
3. What do you mean by data security? List various aspects to the security problem.

Q.6 [A] Explain Steps in query processing with diagram. [08]

[B] Explain different states of transaction with diagram. [07]

OR

[B] Explain Two phase locking protocol with example [07]