(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1432 Roll No. ☐☐☐☐☐☐☐☐☐☐

M.C.A.

(SEM. III) ODD SEMESTER THEORY EXAMINATION 2010-11

DATA BASE MANAGEMENT SYSTEM

Time : 3 Hours *Total Marks : 100*

Note : (1) Attempt **all** questions.

1. Attempt any **four** parts : **(5×4=20)**

   (a) What are data models ? What is a relational data model ? How relational data model is different from network data model ?

   (b) What is a primary key ? How primary key is different from super key and candidate key ?

   (c) What are advantages of database management system over flat file systems ?

   (d) What is data independence ? What are the differences between logical data independence and physical data independence ?

   (e) What are integrity constraints ? How these constraints can be enforced using SQL ?

(f) What are Data Definition languages ? How data definition languages are different from data manipulation language ?

2. Attempt any **two** parts : **(10×2=20)**

(a) Consider the following relational schema :

Employee (emp_id, emp_name, age, salary)

Works (emp_id, Dept_id)

Department (dept_id, dept_name, budget).

Answer the following queries using SQL :

(i) Print the list of Name and Salary of all employees.

(ii) Print the list of name of department and their budget.

(iii) Find the name of all employees who work in a department having budget more than 1 million.

(iv) Find the name of all employees and their respective department where the age of the employee is less than 18 years.

(b) What are differences in Insert, Delete and Update anomalies ? Explain with a suitable example how these anomalies are dealt with.

(c) What do you mean by repetition of information and inability to represent information ? Explain why these properties may indicate a bad database design.

3. Attempt any **two** parts : **(10×2=20)**

(a) What is BCNF ? How BCNF is different from Third Normal form ?

(b) What do you mean by Loss Less Join Decomposition ?
Explain with an example why it is necessary to have a
loss less join decomposition.

(c) Consider a relation schema R=(ABCDE) and the following
set of functional dependencies :

$F = (A \rightarrow B, BC \rightarrow E, ED \rightarrow A)$.

(i) List all keys for R.

(ii) Is R in 3NF ? Justify your answer.

(iii) Is R in BCNF ? Justify your answer.

4. Attempt any **two** parts : $(10 \times 2 = 20)$

(a) What are recoverable schedules ? How recoverable
schedules are different from cascade less schedule ?
Discuss with example, why it is necessary to have
schedules that are both recoverable and cascade less.

(b) What are Time Stamps ? Explain how time stamps can be
used to decide serializability order of the transactions.

(c) What are deadlocks ? Discuss how deadlocks can be
detected using a wait for graphs. Explain with an example.

5. Write short notes on any **four** of the following : $(5 \times 4 = 20)$

(a) Log based recovery

(b) Two phase commit protocol

(c) Concurrency control in distributed database

(d) E-R model

(e) Conflict serializability

(f) Replication and Fragmentation.

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