Printed Pages : 4 MCA313

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

PAPER ID : 7310 Roll No.

M.C.A

(SEM III) ODD SEMESTER THEORY EXAMINATION 2009-10

DATA BASE MANAGEMENT SYSTEM

Time : 3 Hours] *[Total Marks : 100*

Note: *(i)* ***All*** *questions are* ***compulsory.***

(ii) ***All*** *questions carry* ***equal*** *marks.*

1 Attempt any **four** parts of the following : **5×4=20**

(a) What is the concept of data independence and explain its importance in database environment.

(b) What do you understand by constraints in RDBMS ? Define various kinds of constraints.

(c) Write and explain the schema based constraints in RDBMS.

(d) What is foreign key ? Explain its characteristics with example.

(e) What is database model ? Discuss various types of database model in brief.

(f) Describe the basic feature of the RDBMS. Write their merits and demerits to the end user and the designer.

2 Attempt any **four** parts of the following : **5×4=20**

(a) What is difference between a specialization and generalization ?

(b) Consider the following relations :

STUDENT (NAME, ROLL_NUMBER, ADDRESS, MAIN)

ADMISSION (ROLL_NUMBER, COURSE, SEMESTER)

FACULTY (COURSE, FACULTY, SEMESTER)

OFFEREING (BRANCH, COURSE)

Write the SQL command to find the following information :

(c) The name of students admitted in a particular course in a given semester.

(d) Students who have taken all courses offered by a given faculty.

(e) Explain the relational algebra operations from set theory.

(f) What do you understand by assertions ? Explain the CREATE ASSERTION statement in DDL.

3 Attempt any **four** parts of the following : **5×4=20**

(a) What is BCNF ? How is it stronger normal form than 3NF ?

(b) Consider the following two sets of FDs : $F=\{A \rightarrow C, AC \rightarrow D, E \rightarrow AD, E \rightarrow H\}$ and $G=\{A \rightarrow CD, E \rightarrow AH\}$. Check whether they are equivalent.

(c) What is multivalued dependency ? What type of constraint does this specify ?

(d) Define and explain fourth normal form. How is it useful ?

(e) Explain the 5^{th} normal form. Why is it known as project join normal form ?

(f) What is functional dependency ? Explain its role in RDBMS.

4 Attempt any **two** parts of the following : **10×2=20**

(a) What are the ACID properties of a transaction ? How are these useful ?

(b) What is serializability ? Explain the view serializability in detail.

(c) Which of the following schedules are (conflict) serializable ? For each serializable schedule, determine the equivalent serial schedule :

(i) r1(x); r3(x); w1(x); r2(x); w3(x);

(ii) r1(x); r3(x); w3(x); w1(x); r2(x);

(iii) r3(x); r2(x); w3(x); r1(x); w1(x);

(iv) r3(x); r2(x); r1(x); w3(x); w1(x);.

5 Attempt any **two** parts of the following : **10×2=20**

(a) Explain the two phase locking technique. How does two phase locking techniques guarantee serializability ?

(b) Define and explain the various types of transaction failures.

(c) What do you understand by recovery ? Explain the UNDO/REDO and the UNDO/NO-REDO algorithms for recovery.
