



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 : $5 \times 4 = 20$

- What is the concept of data independence and explain its importance in database environment.
- What do you understand by constraints in RDBMS ? Define various kinds of constraints.
- Write and explain the schema based constraints in RDBMS.
- What is foreign key ? Explain its characteristics with example.
- What is database model ? Discuss various types of database model in brief.
- 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 : $5 \times 4 = 20$

(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 : $5 \times 4 = 20$

(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 5th normal form. Why is it known as project join normal form ?
- (f) What is functional dependency ? Explain its role in RDBMS.

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.
-