01295

Printed Pages—4 **MCA—304**

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

PAPER ID : 1432 **Roll No.**

MCA

THIRD SEMESTER EXAMINATION, 2005-2006

DATA BASE MANAGEMENT SYSTEM

Time : 3 Hours *Total Marks : 100*

Note : *(i) Attempt **ALL** questions.*

(ii) All questions carry equal marks.

(iii) In case of numerical problems assume data wherever not provided.

(iv) Be precise in your answer.

1. Attempt ***any four*** parts of the following : **(5x4=20)**

(a) Write down the advantage of DBMS over file system.

(b) What is redundancy ? What are the problems associated with redundancy ?

(c) Explain different E-R modelling styles and the symbols used in each style.

(d) A weak entity set can always be made into a strong entity set by adding to its attributes of its identifying entity set. Outline what sort of redundancy will result if we do so ?

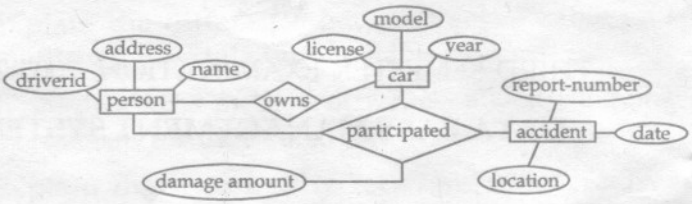
(e) Explain the distinction between disjoint and overlapping constraints with suitable example.

(f) Explain why navigation is simpler in the relational date model than in hierarchical data model ?

2. Attempt *any four* parts of the following : (5x4=20)

(a) Explain existential and universal qualifiers and what are they used for ?

(b) Design a relational database corresponding to E-R diagram given.



(c) Let the following relation schemas be given

$R = (A,B,C)$

$S = (D,E,F)$

Let relations r(R) and s(R) be given. Give an expression in the tuple relational calculas that is equivalent to each of the following.

(i) π_A (r)

(ii) $r \times s$

(iii) $\pi_{A,F}$ ($\sigma_c = D$ ($r \times s$))

(d) Consider the employee database where primary keys are underlined.

employee (employee - name, street, city)

works (employee - name, company-name, salary)

company (company - name, city)

manager (employee - name, manager - name)

Give an expression in SQL for each of the following queries

(i) Find those companies whose employees earn a higher salary on average, than the average salary at First Bank corporation,

(ii) Find all employees in the database who live in same city and an same street as do their manager

(e) For the relation P & Q in the figure

P

A	B	C	D
a_1	b_2	c_2	d_2
a_2	b_1	c_1	d_2
a_1	b_1	c_2	d_1
a_2	b_1	c_2	d_2
a_1	b_2	c_1	d_2
a_3	b_1	c_2	d_1
a_1	b_2	c_2	d_2
a_2	b_1	c_1	d_2
a_1	b_3	c_2	d_2

Q

B	C	D
b_1	c_1	d_2
b_3	c_1	d_2
b_2	c_2	d_1
b_1	c_1	d_2
b_3	c_2	d_2

Perform the following operations

(i) $P \bowtie Q$

(ii) $P \times Q$

(iii) $P \cap Q$

(f) Explain the advantage of Triggers with suitable example.

3. Attempt *any two* parts of the following : **(10x2=20)**

(a) Given R{ABCDEF} with set

$H = \{A \rightarrow CE, B \rightarrow D, C \rightarrow ADE, BD \rightarrow F$

Find the closure of BCD.

(b) Discuss the advantage and disadvantage of representing hierarchical structured data from the real world as unnormalized relation.

(c) Given U{ABCDE} and F = {A → B, BC → D, D → BC, DE → ϕ}, synthesize a set of 3NF relation schemes.

4. Attempt *any two* parts of the following : **(10x2=20)**

(a) Explain the difference between serializable and conflicting schedule with suitable example.

(b) Write down the method of write - ahead - logging mechanism for data recovery.

(c) Explain the reason why recovery of interactive transactions are more difficult than recovery of batch transaction.

5. Attempt *any two* parts of the following : **(10x2=20)**

(a) What is the difference between exclusive lock and shared lock explain with example.

(b) Write down an algorithm to find out cycle in precedence graph.

(c) Explain the difference among fragmentation transparency, replication transparancy and location transparency.

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