S.E. IT. Sem III CBGS May-2014

Sub:- DBMS.

QP Code :**NP-18770**

(3 Hours) [**Total Marks : 80**

N.B. : (1) Question No. **1** is **compulsory**.
(2) **Solve** any **three** questions out of remaining **five**.

1. (a) Define the following terms :– **10**
(i) Transaction
(ii) Primary key
(iii) Deadlock
(iv) Strong entity set
(v) Lock point.

1. (b) Consider the following relation :– **10**

A	B	C	Tuple #
10	b_1	c_1	#1
10	b_2	c_2	#2
11	b_4	c_1	#3
12	b_3	c_4	#4
13	b_1	c_1	#5
14	b_3	c_4	#6

Given the previous state which of the following dependencies may hold in the above relation ? If the dependency cannot hold explain why by specifying the tuples that cause the violation :–
(i) $A \rightarrow B$
(ii) $B \rightarrow C$
(iii) $C \rightarrow B$
(iv) $B \rightarrow A$
(v) $C \rightarrow A$

2. (a) Explain different data models with its advantages and disadvantages. **10**

(b) Explain Generalization, Specialization and Aggregation with the help of an example. **10**

3. (a) Construct on E-R diagram for a car-insurance company that has a set of customers each of whom owns one or more cars. Each car has associated with it zero to any number of recorded accidents. **10**

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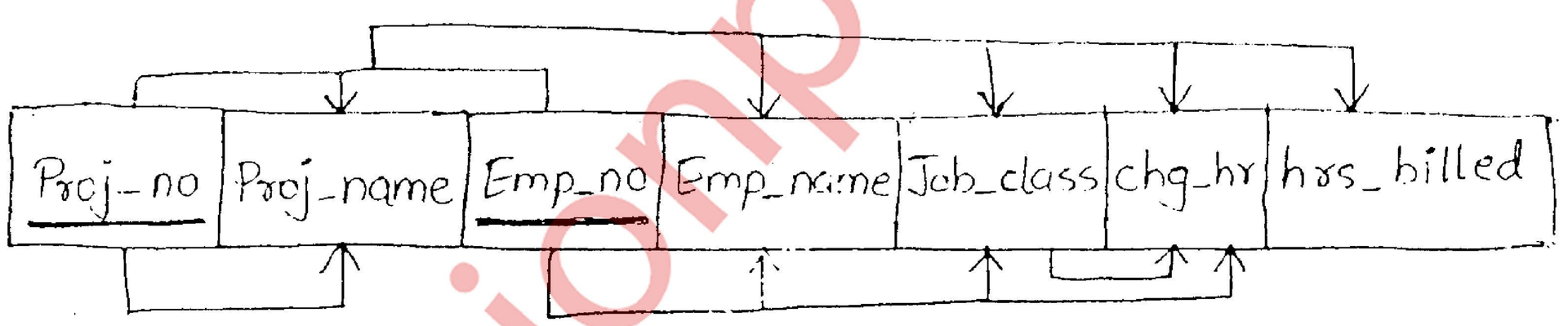
(b) Define Deadlock Detection and Recovery. **10**

4. (a) Consider the following relations for a book club :– **10**
Members (Member-Id, Name, Designation, Age)
Books (Book-Id, Booktitle, BookAuthor, Bookpublisher, Bookprice)
Reserves (Member-Id, Book-Id, Date)
Write SQL queries for following statements :–
(i) Find the names of members who are professor older than 50 years.
(ii) List the titles of books reserved by professors.
(iii) Find Ids of members who have reserved books that cost more than ₹ 500.
(iv) Find the authors and titles of books reserved on 20-09-2012.

(b) What do you mean by serializability schedule ? How would you test whether given schedule S is conflict serializable. **10**

5. (a) Consider a dependency diagram of relation R and normalize it up to third normal form. **10**



(b) Explain shadow paging method. **10**

6. (a) Draw the Query tree for the following relational algebra expression :– **10**

$$\pi \text{ Customer - name}(\sigma \text{ branch - city} = \text{"Brooklyn"} \wedge \text{balance} > 1000 ((\text{branch} \bowtie (\text{account} \bowtie \text{depositor})))$$

(b) Explain the following relational algebra operations with proper examples :– **10**
(i) Natural join
(ii) Assignment
(iii) Rename
(iv) Set-Intersection operation
(v) Union.
