c) Explain two phase locking protocol? 5

d) What is Cascading rollback? How it can be avoided in twophase locking protocol? 6

8. Write short notes on the following :

a) Security feature of DBMS.

b) PL/ SQL

c) Database trigger

d) 3NF vs. BCNF

e) Spurious tuple and its avoidance. 4x5

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BACHELOR OF COMPUTER Sc. ENGG. EXAMINATION 2009

(3rd Year, 1st Semester, Supplementary)

DATABASE MANAGEMENT SYSTEMS

Time : Three hours Full Marks : 100

Attempt any ***five*** questions.

1. a) What is DBMS ? 4

b) Explain the advantages of DBMS over file processing system ? 6

c) Write down the function of DDL interpreter, database manager, DML precompiler ? 8

d) What is the difference between instance and schema of a database ? 2

2. a) What is ER diagram ? 3

b) Explain the Constraints on the relation of ER diagram? 5

c) what is weak entity set ? Comment on its primary key. 5

d) Draw the ER diagram for the system below :

An organisation sells various items. Customer places orders. Each order is handled by a salesman An order

may refer to various items. System must keep information of items, customer, salesman and orders. Also trachs which order refer what items, handled by whom etc. 7

3. a) What is candidate key, primary Key and foreign key? 7

b) Armstrong's axioms are sound and complete – explain. 4

c) What is functional dependancy ? 3

d) Consider a schema R (A, B, C, D, E, F, G, H)

F.D. set that holds on R is as follows :

$C \longrightarrow D, E, F$

$B \longrightarrow C, G$

$AG \longrightarrow H$

Assume, all the attributes are atomic and single valued. Normalize R upto 3NF. Show steps and indicate primary and foreign keys. 6

4. a) Explain primary, secondary and clusterring index. 9

b) What is query processor? 3

c) Suppose, two relations R1 and R2 are to be joined. Write down the hash join algorithm. 8

5. a) Consider the following tables :

EMP (**E CODE**, ENAME, DCODE, BASIC)

DEPT (**D CODE**, DNAME)

Write down the SQL Statement for the following :

i) Show department code and total basic for each department. 3

ii) For each employee show his name and the name of the department in which he works. 3

iii) Find out the name of the department in which RAM (name of an employee) works. 3

iv) Increase the basic of all employees by 10%. 3

v) Find out the name of departments in which at least one person works. 3

vi) Delete the employees with basic less than 10,000. 2

b) Write down the relational algebra expression to find out the name of the employees with basic more than 10,000 and working in the department named as ACCOUNTS. 3

6. a) What is a transaction? Describe the ACID properties. 6

b) Explain the various states of a transaction. 5

c) What is a log file? How does it help in recovery ? 6

d) What is the advantage of checkpoint? 3

7. a) What is a Concurrent schedule ? 4

b) What do we mean by Conflict serializability? 5