BACHELOR OF COMPUTER SCIENCE ENGG. EXAMINATION, 2010

(3rd Year, 1st semester, Supplementary)

DATABASE MANAGEMENT SYSTEMS

Time : Three hours   Full Marks :100

Answer any *five* questions.

1. a) What is ER diagram?   4

   b) What is weak entity set?   5

   c) Suppose, A and B are two relations with many to many mapping. How will you design the tables?   5

   d) Draw the ER diagram for the system described below :

   In a course, number of subjects are tanght. Number of faculties may have expertise in a subject and a faculty may also be expert in number of subjects. In a course, one faculty is allotted for one subject. Same subject may be tanght in various courses. System must be able to handle course, subject, faculty and allotment information.   6

2. a) What is functional dependency?   3

   b) What is foreign key? How does it influence DML operation?
                                                                        6

   c) Explain – 'Armstrong's axioms are sound and complete. 4

   d) What are loss-less and dependency preserving decomposition?   7

3. a) What is normalization? Explain, why is it done? 7

b) What are the problems caused by NOLL value and redundancy? 5

c) Normalize the following upto 3NF :

for each employee there is unique emp -code. The data Structure stores emp-code, emp-name, dt-join, basic, address and (dept-code, dept-name, dept-location) of the department in which he/she works, and (Manager code - Manager-name) of the managers under whom he/she works. Consider, the following F.D.S also :

emp-code → emp-name, dt-join, basic,

address, dept-code, manager-code

dept-code → dept-name, dept-location,

manager-code → manager-name 8

4. a) Compare ordered and unordered file. 4

b) What is sparse index? Why does the primary index is sparse? 5

c) How does secondary index can help? 4

d) Write down the block iteration method for joining two relation. Mention the no. of block accesses required. 7

5. Consider the following relations :

EMP (ECODE, ENAME, DCODE, BASIC, GRADE)

DEPT (DCODE, DNAME)

Write down the SQL statements for the following :

a) Find out the member of employees in each department (show DCODE and the numbers) 3

b) Find out the average basic of Grade A employees in the department named as XYZ. 4

c) Find out the name of the department where nobody works. 4

d) Delete the employees working in the department named as XYZ. 3

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

f) Show the name of the employees department wise and with in a department it must be in the descending order of basic. 3

6. a) What is trigger? How can you specify the event? 5

b) What is a PL/SQL block in oracle? Explain when the NO-DATA-FOUND and TOO-MANY-ROWS exceptions are raised? 8

c) What is a transaction? Describe its properties and state? 7

7. a) Why do we need concurrency control? 4

b) What is conflict serializable schedule? 5

c) Explain REDO and UNDO operation in recovery. 5

d) What is the advantage of CHECKPOINT? What happens when CHECKPOINT operation is done? 6

8. Write short notes on the following : 5 x 4

i) Advantage of DBMS over file processing system.

ii) Two phase locking protocol

iii) Security features of DBMS

iv) Functional units of DBMS.

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