F.Y.B.Sc.(Computer Science)

Semester-II Examination

USCS - 122: Database Management Systems - I

Time: 2:00 Hours **Marks: 35**

Instructions to candidates:

1. All question are compulsory.
2. Draw neat labelled diagram whenever necessary.
3. Figure to the right indicate full marks.

Q1] Solve any five questions from the following **[5 x 1 = 5]**

a) Define Sophisticated user of DBMS.
b) Explain Derived attribute.
c) Consider the relation Employee (e_no, e_name, designation, salary)
Write the following Query in Relational Algebra :
Find names of Employees having salary greater than 10,000.
d) What are the different types of data models?
e) Give the syntax for deleting a tuple from the existing relation.
f) How to represent the Rename operator in Relational Algebra?

Q2 A] Solve any two of the following **[2 x 3 = 6]**

a) Explain Aggregation in ER Model with proper example.
b) Define Primary Key and Unique Key.
c) What is a strong and weak entity set? Explain with example.

Q2 B] Solve any two of the following **[2 x 2 = 4]**

a) State the advantages of DBMS over traditional file system.
b) What is the Order by clause used for? Explain with suitable example.
c) What is DML?

Q3 A] Solve any two of the following **[2 x 3 = 6]**

a) What are the different symbols used for ER diagram.
b) Describe the referential integrity constraint with example.
c) Explain any two types of Mapping cardinalities with example.

Q3 B] Solve any two of the following **[2 x 2 = 4]**

a) Explain Data Abstraction.
b) State the column level constraints.
c) Write the syntax for adding and removing column from the existing relation.

Q4] Attempt the following **[2 x 5 = 10]**

a) Cinsider the following Relational Schema.
Car(c_no, Model, Colour, Year, Price, O_no)
Owner (O_no, Name, age, address, phone no)
Each owner can have one or more cars, But a car belongs to only one owner.
Solve any five of the following queries in SQL.
1. Find the details of all cars with "Yellow" colour.
2. Find the cars owned by "Miss Ovee"
3. Find the highest price of cars.
4. Find details of all cars having price greater than 2,00,000 and are made in year 2020.
5. Find details of all owners, sorted by owner names.
6. Find details of owner where age is less than 18.

b) We need to store information about Farmers and the crops they are harvesting. We need to store the Adhar card No, Name, Age, Address, Phone no etc for the farmer. A farmer can take different crops in his farm. We need to store details of crop such as Name, Year when grown, Season when grown, Total Crop Produce, selling Price. We also need to keep track to stores which buy the crop. Details like Store Name, Address, Phone No etc has to be stored. A farmer can take many different crops in his farm, and different crops can be sold to the store.

1. Find Entities and their Attributes for the above description.
2. Draw an ER Diagram for the above scenario.

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S.Y.B.Sc (Computer Science)

Semester III Examination

USCS-232 Relational Database Management Systems

Time: 2:00 Hours] **[Marks: 35**

Instructions to candidate:

1. All questions are compulsory.
2. Draw neat labeled diagrams wherever necessary.
3. Figure to the right indicate full marks.

Q.1 Solve any **FIVE** of the following. **[5]**

a) Write syntax of GRANT command.

b) What is shared lock?

c) What is meant by stored function?

d) What is the concurrent schedule?

e) Define deadlock.

f) What is log?

Q.2 A] Answer any **TWO** of the following. **[6]**

a) Explain time stamp based protocol with read write conflicting conditions.

b) Explain failure Classification.

c) Which are different types of log entries are there in system log? Explain with examples.

Q.2 B] Answer any **TWO** of the following. **[4]**

a) What is the purpose of FETCH clause? Write its syntax.

b) Explain any one database security technique.

c) Give different types of transaction operations.

Q.3 A] Answer any **TWO** of the following. **[6]**

a) Write a stored function to list details of students. Consider the following schema for writing this:

Student (sno, sname)

Teacher (tno, tname, qualification)

Both these are related with many-many relationship

b) Explain different types of conditional statements in pl/plsql

c) Explain deadlock with example.

Q.3 B] Answer any **TWO** of the following. **[4]**

a) The following is a list of events in an interleaved execution of set of transaction T1, T2, T3, T4 with two phase locking protocol:

Time	Transaction	Code
t1	T1	LOCK (A,X)
t2	T2	LOCK (B,S)
t3	T3	LOCK (A,S)
t4	T4	LOCK (B,S)
t5	T1	LOCK (B,X)
t6	T2	LOCK (C,X)
t7	T3	LOCK (D,S)
t8	T4	LOCK (D,X)

Find, is there any deadlock? If yes, which transactions are involved in a deadlock?

b) Explain different types of locks.

c) What is trigger? Give the syntax.

Q.4 Answer any **TWO** of the following. **[10]**

a) Following are the log entries at the time of system crash:

<T1, start>
<T1, X, 40>
<T1, commit>
<checkpoint>
<T2, start>
<T2, U, 80>
<T3, start>
<T3, Z, 40>
<T2, commit>
system crash

if immediate update technique is used, what will be the recovery

procedure?

b) Consider the following schema:

Train : (train_no, train_name , source_stn dest_stn)

Passenger: (pass_id, passenger_name, address, age)

Ticket : (ticket_no ,bogie_no , ticket,status)

Pass_Tick(train_no, pass_id, t_date)

Write a stored function to find the train wise bookings on '18-05-2009'.

c) Consider the following schema:

Student (roll, name, address, class)

Subject (code, subjectname, teachername)

Stud _Sub (roll, code, marks)

Define a trigger before insert for every row as a student-subject table, whatever marks entered is <0 or >100, raise an error message "Invalid Entry".

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