C.U.SHAH UNIVERSITY
Winter Examination-2018

Subject Name: Database Management System

Subject Code: 4TE03DMS1   **Branch: B.Tech (CE)**

Semester: 3   **Date : 10/12/2018**   **Time : 2:30 To 5:30**   **Marks : 70**

Instructions:
- (1)   Use of Programmable calculator & any other electronic instrument is prohibited.
- (2)   Instructions written on main answer book are strictly to be obeyed.
- (3)   Draw neat diagrams and figures (if necessary) at right places.
- (4)   Assume suitable data if needed.

Q-1   **Attempt the following questions.**   **(14)**

a.   Which of the following is not a property of transactions?
(A) Atomicity (B) Concurrency
(C) Isolation (D) Durability

b.   In 2NF
(A) No functional dependencies (FDs) exist.
(B) No multivalued dependencies (MVDs) exist.
(C) No partial FDs exist.
(D) No partial MVDs exist.

c.   In a relational model, relations are termed as
A) Tuples   B) Attributes C) Tables   D) Rows

d.   A transaction is in _____ state after the final statement has been executed.
(A) partially committed (B) active
(C) committed (D) none of the above

e.   Relational Algebra is
A) Meta language   B) Procedural query language   C) Data definition language   D) Programming language

f.   Assume transaction A holds a shared lock R. If transaction B also requests for a shared
lock on R.
(A) It will result in a deadlock situation.
(B) It will immediately be rejected.
(C) It will immediately be granted.
(D) It will be granted as soon as it is released by A .

g.   What is data integrity?
(A) It is the data contained in database that is non redundant.

(B) It is the data contained in database that is accurate and consistent.
(C) It is the data contained in database that is secured.
(D) It is the data contained in database that is shared.

h. Which is not an Aggregate Function
A) First()   B) Avg()   C) Count()   D) Round()

i. The term _____ is used to refer to a row.
A) Attribute B) Tuple   C) Field   D) Instance

j. The users who use easy-to-use menu are called
A) Sophisticated User   B) Naïve User   C) Specialized User D) Casual end User

k. To delete a particular column in a relation the command used is:
A) DROP   B) DELETE C) ALTER   D) UPDATE

l. A database schema is written in
A) HLL   B) DML   C) DCL   D) DDL

m. Full Form of SQL is
A) Structured queries language   B) Structure query logic   C) Structure Query Language   D) System queries language

n. The values of the attribute describes a particular_____
A) Entity   B) Entity Instance   C) File   D) Organization

Attempt any four questions from Q-2 to Q-8

Q-2   Attempt all the questions.   **(14)**

a) What is DBMS? What are the goals & Applications of DBMS?

b) Explain all the advantages of DBMS and disadvantages of file system.

Q-3   Attempt all the questions.   **(14)**

a) Explain the following terms with suitable example.
   1. Primary Key 2. Candidate key 3. Super Key 4. Composite Key

b) What is Normalization? Explain data redundancy and update anomalies with proper examples.

Q-4   Attempt all the questions.   **(14)**

a) Draw E-R Diagram for College Management System and assume suitable entities.

b) Consider the following employee schema and write SQL queries for the followings:
   Person (ss#, name, address)
   Car (license, year, model)
   Accident (date, driver, damage-amount)

Owns (ss#, license)
Log (license, date, driver)

(1) Find the total number of people whose cars met with an accident in year 2009.
(2) Find the number of accidents in which the cars belonging to "S.Sudarshan".
(3) Add a new customer to the database.
(4) Add a new accident record for 'CRETA' belonging to "KORTH".

Q-5   **Attempt all the questions.**   **(14)**

a)   Explain 3NF for normalization. Consider a relation R with four attributes A, B, C, D having following dependencies. Find out whether it is in 3NF or not.

1. $A \rightarrow B$, $B \rightarrow C$

2. $AB \rightarrow C$, $B \rightarrow C$, $C \rightarrow B$

b)   Explain DDL, DML and DCL with proper examples.

Q-6   **Attempt all the questions.**   **(14)**

a)   Explain importance of view, cursor and trigger in DBMS.

b)   What are the responsibilities of DBA?

Q-7   **Attempt all the questions.**   **(14)**

a)   Define deadlock. Explain deadlock detection, prevention, recovery techniques.

b)   What is Concurrency? What are the three problems due to concurrency? How the problems can be avoided? Explain any one of them.

Q-8   **Attempt all questions**   **(14)**

a)   What is Query Optimization Process? Explain in detail.

b)   How are integrity and security achieved in DBMS? Explain with examples.