

(3 Hours)

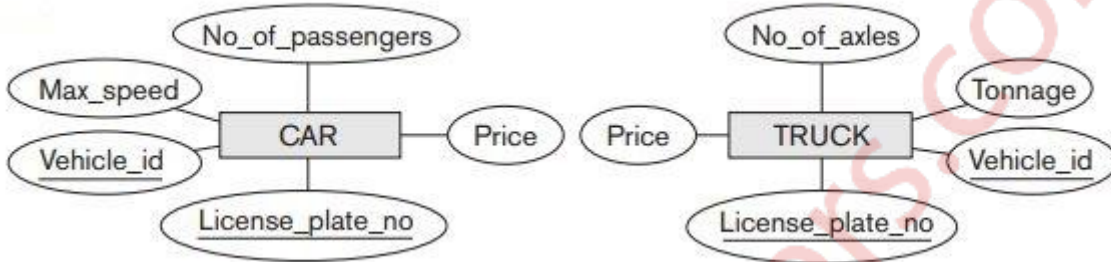
Marks :80

NB:

1. Question No. 1 is compulsory and solve any THREE questions from remaining questions
2. Assume suitable data if necessary
3. Draw clean and neat diagrams

Q1. Attempt any four

- a. Discuss the duties of database administrator
- b.



Generalize CAR and TRUCK into the superclass VEHICLE

- c. Explain Transaction Control Commands (TCL) 5
 - d. Discuss partial dependency and transitive dependency with the help of an example 5
 - e. Discuss various types of transaction failures 5
- Q2. a. A database is being constructed to keep track of the teams and games of a sports league. A team has a number of players, not all of whom participate in each game. It is desired to keep track of the players participating in each game for each team, the positions they played in that game, and the result of the game. Design an ER schema diagram for this application, stating any assumptions you make. Choose your favorite team sport (e.g., baseball, curling, kabaddi, ...). Be sure your design is described in a way understandable by someone not familiar with that sport. 15
- Show clearly following things in E-R diagram
1. Mapping cardinalities
 2. Weak / Strong entity (if any)
 3. Relationship set
 4. Primary key
- b. Explain Two-tier and Three-tier architectures of database system 5

Consider following relations

Q3. a.

STUDENT	
Fn	Ln
Susan	Yao
Ramesh	Shah
Johnny	Kohler
Barbara	Jones
Amy	Ford
Jimmy	Wang
Ernest	Gilbert

INSTRUCTOR	
Fname	Lname
John	Smith
Ricardo	Browne
Susan	Yao
Francis	Johnson
Ramesh	Shah

Write the output for the following queries 10

1. STUDENT \cup INSTRUCTOR
2. INSTRUCTOR – STUDENT
3. STUDENT – INSTRUCTOR
4. STUDENT \cap INSTRUCTOR

- b. Explain SQL aggregate functions with the help of an example 10

- Q4 a. Explain the need of database normalization. Discuss the steps to convert the given database in 3NF **10**
b. Explain following types of attributes with the help of an example for each type: i) single valued **10**
ii) multivalued. Define weak entity and strong entity
- Q5 a. Discuss ACID properties of transaction in detail **10**

Consider the following database:

- b. **10**
Movies(title, year, length, genre, studioName, producer)
StarsIn(movieTitle, movieYear, starName)
MovieStar(name, address, gender, birthdate)
MovieExec(name, address, cert#, netWorth)
Studio(name, address, pres)

With reference tom above database write SQL queries for the following: (any FIVE)

1. Who were the male stars in Titanic?
 2. Find the title of all MGM movies produced after 1970 or that run for less than 90 minutes
 3. Find all the stars that appeared either in a movie made in 1980 or a movie with "Love" in the title.
 4. Which movies are longer than Gone With the Wind?
 5. Find all the stars who either are male or live in Miami
 6. Find all executives worth at least \$10,000,000.
- Q6 a. What do you mean by deadlock with respect to transaction? Explain the procedure for deadlock handling **10**
b. Write short notes on EER model. **10**