***This assignment must be hand-written. Deadline: 30th November, Thursday 11:59 PM***

***Submission Link:*** [***https://forms.gle/thc4DTnhVpKUZtTx6***](https://forms.gle/thc4DTnhVpKUZtTx6)

**Question 1 [CO3]: 10 Points**

**Construct a schema diagram given the ER diagram below. [10 points]**



**Question 1 [CO4]: 10 Points**

Consider the following relation:

**CAR\_SALE (Car, Salesperson, Commission, Date\_sold, Discount\_amt)**

The primary key of the relation is underlined. Assume that a car may be sold by multiple salespersons and so **{Car, Salesperson}** is the primary key.

Suppose the following additional dependencies exist:

**Date\_sold → Discount\_amt**

**Salesperson → Commission**

Based on the given primary key,

**(i)** Explain whether this relation is in 1NF. If not, decompose it to 1NF. [2 Points]

**(ii)** Explain whether the relation of no (i) is in 2NF. If not, decompose it to 2NF. [4 Points]

**(iii)** Explain whether the relation of no (ii) is in 3NF. If not, decompose it to 3NF. [4 Points]

**Question 2 [CO4]: 10 Points**

Consider the following relation:

**T20CricketTournament (TournamentAcronym, Team\_ID, Tournament\_ID, Tournament\_Title, Tournament\_Matches, Base\_Amount, Final\_Amount, Team\_Name, Team\_Lead, Tournament\_Year, Tournament\_Sponsor, Tournament\_Logo)**

The primary key of the relation is underlined.

Suppose the following additional dependencies exist:

**FD1: TournamentAcronym → Tournament\_ID, Tournament\_Title, Tournament\_Matches, Base\_Amount**

**FD2: Team\_ID → Team\_Name, Team\_Lead**

**FD3: Tournament\_ID → Tournament\_Title, Tournament\_Matches**

Based on the given primary key,

**(i)** Explain whether this relation is in 1NF. If not, decompose it to 1NF. [2 Points]

**(ii)** Explain whether the relation of no (i) is in 2NF. If not, decompose it to 2NF. [4 Points]

**(iii)** Explain whether the relation of no (ii) is in 3NF. If not, decompose it to 3NF. [4 Points]