**Department of Computer Science and Engineering**

**Faculty of Engineering**

**University of North Texas**

Mid Term Examination I CSCE5350 summer 2022

Time Allowed: 1hour 30 minutes Answer All questions

1. Consider the following relations

Doctor(SSN, FirstName, LastName, Specialty, YearsOfExperience,PhoneNum)

Patient(SSN, FirstName, LastName, Address, DOB, PrimaryDoctor\_SSN)

Medicine(TradeName, UnitPrice, GenericFlag)

Prescription(Id, Date, Doctor\_SSN, Patient\_SSN)

Prescription\_Medicine(Prescription Id, TradeName, NumOfUnits)

1. Write a **relational algebra** expression to list all the doctors whose specialty is “Neurology”
2. Write a **relational algebra** expression to list all the prescriptions given by each doctor. Select TradeName, doctor’s SSN
3. Write a **relational algebra** expression to list the first and last name of patients with the primary doctor’s first name.
4. Write **SQL** statement to retrieve the number of patients for each doctor. You must display the doctor’s first name along with the number of patients he/she is the primary doctor of
5. Write the **DDL (SQL)** statement to create **Prescription** table. Include all the constraints. Assume the data type for each attribute.
6. You are hired to design a database for a simple online ordering website for a local store. Customer explains his/her requirements as follows. Use these requirements to develop an Entity Relationship model of the system (E-R model). Pay close attention to cardinalities. Clearly mark the primary key of each entity. If there is no obvious primary key visible, add a unique id. Ex: CustomerId for customer entity.

Include adequate number of attributes to identify each entity.

1. We need to keep a track of all the customers who buys stuff from our website.
2. Each customer can have many orders. For a given order, there is only one customer
3. Order has a delivery method associated with. And each order has a shipping address. If the delivery method is “pickup”, there is no shipping address associated with it.
4. Website lists many products; each product belongs to a certain category. Ex: toys, beaty products, etc.
5. Product has a supplier. One supplier can provide many products and, one product can be supplied by many suppliers
6. Each order is paid with a payment method. One order can have one payment method only. Payment method has payment information such as billing address, name, type, etc.