Section B: Write SQL statements based on the given schema below. 5 marks for questions.

The following tables form part of a database held in a relational DBMS.

Hotel (hotelNo, hotelName, hotelAddress)
Room (roomNo, hotelNo, type, price)
Booking (hotelNo, guestNo, dateFrom, dateTo, roomNo)
Guest (guestNo, guestName, guestAddress)

1. List the price and type of all rooms at the Grosvenor Hotel.

```
SELECT price, type
FROM Room r, Hotel h
WHERE r.hotelNo = h.hotelNo AND h.hotelName = 'Grosvenor Hotel';
```

2. List the number of rooms in each hotel in London.

```
SELECT r.hotelNo, COUNT(r.roomNo) AS count
FROM room r, Hotel h
WHERE r.hotelNo=h.HotelNo AND
        h.city = 'London'
GROUP BY r.hotelNo;
```

Section C: Answer the following questions.

3. Staff (staffNo, name, address, position, salary, branchNo, bAddress)

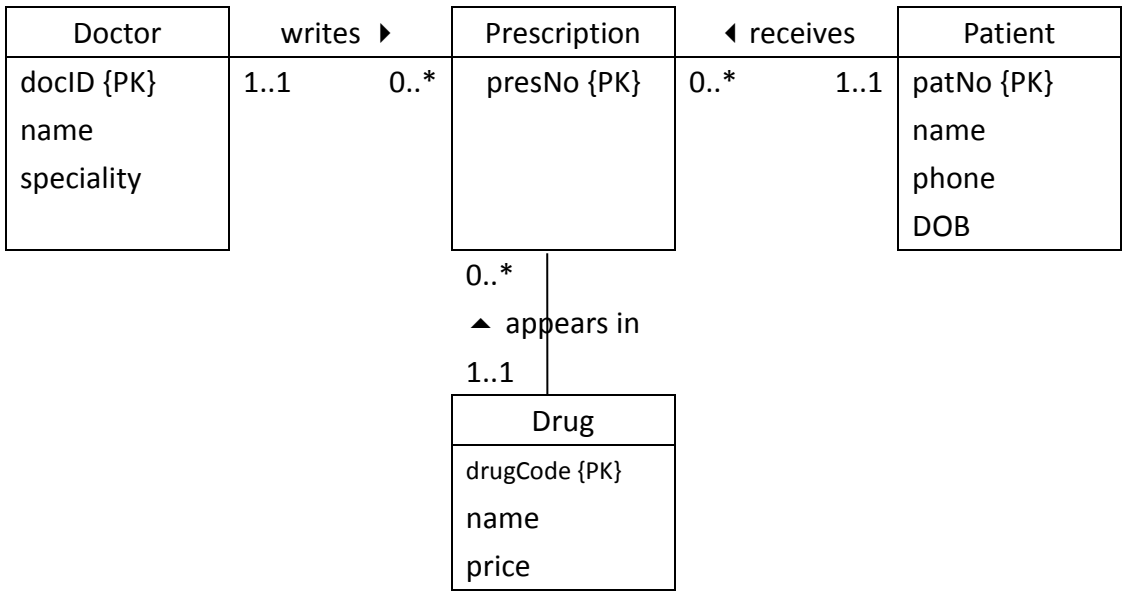
3.1. Explain why the given table is not in third normal form.

It is not in third normal form because transitive dependency (branchNo → bAddress) exists.

3.2. Transform the given table into third normal form. Indicate the primary key for each table.

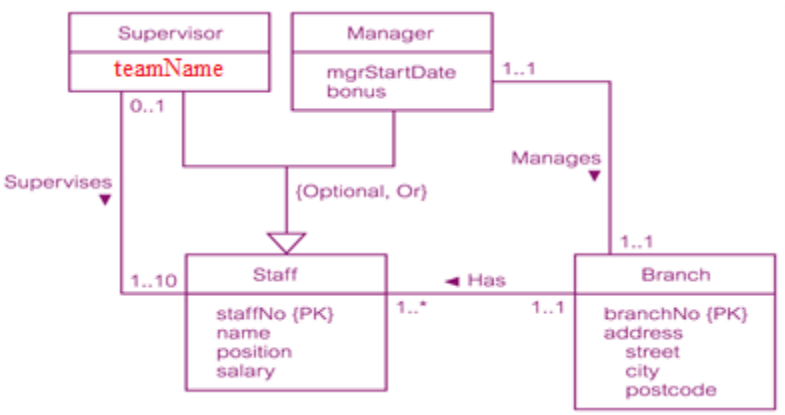
Staff (staffNo, name, address, position, salary, branchNo)
Branch (branchNo, bAddress)

4. Derive relations from the following conceptual data model, indicate the primary keys and foreign key(s) as well. For each foreign key, state the relation it is associated with.



Doctor (docID, name, speciality)
Patient (patNo, name, phone, DOB)
Drug(drugCode, name, price)
Prescription (presNo, docID, patNo, drugCode)
FK docID references Doctor(docID)
FK patNo references Patient (patNo)
FK drugCode references Drug (drugCode)

5. Answer questions based on the given enhanced Entity relationsip Model.



5.1. Is it possible for a staff to be both a supervisor and a manager? Justify your answer.

No, because of the disjoint constraint being 'OR'.

5.2. Is it required that every entity instance in the Staff entity be associated with an entity instance in either the Supervisor or the Manager entity? Justify your answer.

No, because of the participation constraint being 'optional'.

5.3. List the attributes of a manager.

Staff (staffNo, name, position, salary, mgrStartDate, bonus)