Using the functional dependencies convert each of the following into 3NF using the steps discussed in class. Make sure you show each normal form (1NF, 2NF and 3NF) and explain why they are in that form. You may add fields if they will clarify or simplify your relations, but you must include notes on what they are and why you chose to add them.

1. horse(horseId, horseName,dob,sire,dam,
        (raceId,raceName,postPosition,finalStanding,dollars,(winPurse,placePurse,showPurse))
FDs
horseId → horseName,dob,sire,dam   (sire and dam are also horseIds)
raceId → raceName, winPurse, placePurse,showPurse
horseId, raceId → postPosition,finalStanding,dollars

a) 1NF

b) 2NF

c)3NF

2. library(libraryId, name, street, city, state, zip, phone,
        (bookIsbn, title, publisher, pubDate,pages,(authorId, fname, lname),totalCopies,numOnShelf))
FDs
libraryId → name,street,city,state,zip, phone
bookIsbn → title, publisher,pubDate,pages
authorId → fname,lname
libraryId, bookIsbn → totalCopies, numOnShelf

a) 1NF

b) 2NF

c)3NF

3. disease(id, commonName, scientificName, (symptom, description),(drug, drugName, generic (sideEffect, sDescription, severity)), contagiousPeriod, lethality)

FDs
id → commonName, scientificName, contagiousPeriod, lethality
symptom → description
drug → drugName, generic
sideEffect → sDescription,
drug, sideEffect → severity

a) 1NF

b) 2NF

c)3NF