(The submission should be handwritten and in a PDF format)

1

X	Y	Z	A
abcefg	1	q	10
xyz	2	p	11
feg	3	q	12
xyz	2	p	13
abcdefg	3	q	10

10

Find out which of the following dependencies are valid or invalid. For each dependency, briefly write the reasons.

1. X -> YZ
2. X -> Z
3. XY -> A
4. A -> XYZ
5. YZ -> X

2   Consider the following relation:

Computer_Repair(Comp_ID, Engineer_ID, Date_Assigned, Customer_name, address, phone, Engineer_Name, Date_Repaired, Issue, Priority_Level, Service_Charge, Commission_Percentage, Total_Repairs)

The primary key of the relation is underlined

The relation has the following additional functional dependencies:

FD1: Engineer_ID→ Engineer_Name, Total_Repairs, Commission_Percentage

FD2: Comp_ID → Customer_name, address, phone

FD3: Comp_ID, Date_assigned→ Issue, Priority_level, Service_Charge

FD4: Total_Repairs → Commission_Percentage

FD5: Priority_level → Service_Charge

i. Explain if this is in 1NF or not. If not, decompose it to 1NF.   2

ii. Explain if this is in 2NF or not. If not, decompose it to 2NF.   4

iii. Explain if this is in 3NF or not. If not, decompose it to 3NF.   4