DDD I Assignment 1

Problem 1 :-

① The non-trivial FD's are the Implied FD's which we got are,

$$C \rightarrow A, AB \rightarrow D,$$
$$BC \rightarrow D$$

② AB, BC, BD are keys.

③ ABC, ABD, BCD are superkeys also ABCD which includes all attributes.

Problem 2 :-

①

ⓐ So let's take example of a class table, which have A attribute for Roll.No. or Registration No. and B attribute for Name. So, the Table is following :-

Reg. No.	Name
101	XYZ
102	ABC
103	XYZ

So, it shows that A → B is satisfying it but B → A doesn't. (Many Names Could be Same)

Ⓑ Now, let us take another example of a football team players in a school and the table consists of their Registration No. (A), Gender (B) and Name (C)

So, the table will be like following :-

A	B	C
Reg. No	Gender	Name
101	M	XYZ
102	F	ANY
103	F	ZXC
104	M	XYZ

So, here we can see that $AB \to C$ satisfy.

$A \to C$ Can be satisfied

But $B \to C$ Can't be satisfied as there can be various players with same name and gender.

Ⓒ $\{AB \to CD, C \to EH, D \to G\} \vDash AB \to EGH$

So, According to <u>Composition</u> we can say

$\{C \to EH, D \to G\} \vDash CD \to EHG$

and Now, using Axiom of transitivity we have

$\{AB \to CD, CD \to GH\} \xrightarrow{\text{Transitivity}} \{AB \to EGH\}$.

Problem 3 :-

Relation R(A, B, C, D, E)

Projection of FD's on Relation S(A, B, C)

(a) $AB \to DE, C \to E, D \to C$ and $E \to A$

$AB \to DE$, $C \to E$ are the FD's that hold in S if the FD's for R are given above.

Ⓑ $AC \to E$ and $DE \to B$ are the FD's that hold in S if the FD's for R are $A \to D$, $BD \to E$, $AC \to E$ and $DE \to B$