[Suprahim Nag/CSE-AIML/22/57] => [AI/CA3]

1) Set of statements, "I will be wet, if it rains and I go out of the house. If is raining now. I go out of the house. I will not be wet.

i) define propositional vars:-

R: It is raining.

O: I go out of the house.

W: I will be wet.

ii) statements into logical expressions:-

"I will be wet, if it rains and I go out of the house"

↳ $(R \wedge O) \rightarrow W$

"It is raining now" $\rightarrow R$

"I go out of the house" $\rightarrow O$

"I will not be wet" $\rightarrow \neg W$

iii) Truth Table:-

R	O	W	R∧O	(R∧O)→W	¬W
T	T	T	T	T	F
T	T	F	T	F	T
T	F	T	F	T	F
T	F	F	F	T	T
F	T	T	F	T	F
F	T	F	F	T	T
F	F	T	F	T	F
F	F	F	F	T	T

now in the second row,

$R = T,\ O = T,\ W = F,$

in this row $(R \wedge O) \rightarrow W$ evaluates False, because if both R & O are true, but W is false, the violates logical implication, therefore this row is inconsistent

So, The set of statements are inconsistent because in second row, logical implication $(R \wedge O) \rightarrow W$ fails but $\sim W$ is true.

Q) E = Set of all student . $|E| = 600$

A = set of male student, $|A| = 300$

B = set of bowlers " . $|B| = 225$

C = set of batsmen . $|C| = 160$.

i) number of male students who are bowlers :- $|A \cap B|$

ii) number of male students who are both batsmen & bowlers :→ $|A \cap B \cap C|$

iii) number of male student who are batsmen

↳ $|A \cap C|$

iv) number of students,

a) who are female, not bowlers, not batsmen :-

↳ $|(E-A) \cap \sim B \cap \sim C|$

b) female, bowlers, not batsmen :- $|(E-A) \cup B \cap \sim C|$

↳

⇒