Week-6

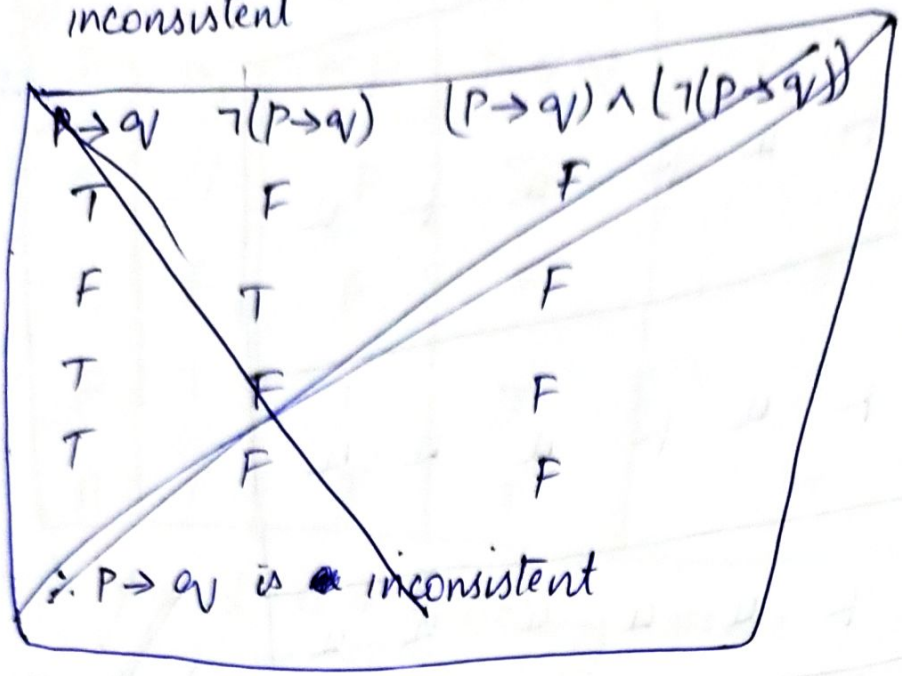
(1) $(\neg p \wedge (\neg q \wedge r)) \vee ((q \wedge r) \vee (p \wedge r)) \Rightarrow r$

p	q	r	$\neg p$	$\neg q$	$\neg q \wedge r$	$\neg p \wedge (\neg q \wedge r)$	$q \wedge r$	$p \wedge r$	$(q \wedge r) \vee (p \wedge r)$	$(\neg p \wedge (\neg q \wedge r)) \vee ((q \wedge r) \vee (p \wedge r))$
T	T	T	F	F	F	F	T	T	T	T
T	T	F	F	F	F	F	F	F	F	F
T	F	T	F	T	T	F	F	T	T	T
T	F	F	F	T	F	F	F	F	F	F
F	T	T	T	F	F	F	T	F	T	T
F	T	F	T	F	F	F	F	F	F	F
F	F	T	T	T	T	T	F	F	F	T
F	F	F	T	T	F	F	F	F	F	F

Hence proved $(\neg p \wedge (\neg q \wedge r)) \vee ((q \wedge r) \vee (p \wedge r)) \Rightarrow r$

(2) $P \to q$, $P \to r$, $q \to \neg r$, $q \to$?? are

inconsistent



$P \to r$

P	r	P→r	¬(P→r)	(P→r)∧(¬(P→r))
T	T	T	F	F
T	F	F	T	F
T	T	T	F	F
T	F	F	T	F
F	T	T	F	F
F	F	T	F	F
F	T	T	F	F
F	F	T	F	F

∴ $P \to r$ is inconsistent

$p \to q$.

p	q	$p \to q$	$\neg(p \to q)$	$(p \to q) \wedge (\neg(p \to q))$
T	T	T	F	F
T	T	T	F	F
T	F	F	T	F
T	F	F	T	F
F	T	T	F	F
F	T	T	F	F
F	F	T	F	F
F	F	T	F	F

$\therefore p \to q$ is inconsistent

$q \to \neg r$

q	r	$\neg r$	$q \to \neg r$	$\neg(q \to \neg r)$	$(q \to \neg r) \wedge (\neg(q \to \neg r))$
T	T	F	F	T	F
T	F	T	T	F	F
F	T	F	T	F	F
F	F	T	T	F	F
T	T	F	F	T	F
T	F	T	T	F	F
F	T	F	T	F	F
F	F	T	T	F	F

$\therefore q \to \neg r$ is inconsistent

$q \vee \neg p$

q	$\neg p$	$q \vee \neg p$	$\neg(q \vee \neg p)$	$(q \vee \neg p) \wedge (\neg(q \vee \neg p))$
T	F	F	T	F
T	F	F	T	F
F	F	T	F	F
F	F	T	F	F
T	T	T	F	F
T	T	T	F	F
F	T	T	F	F
F	T	T	F	F

$q \vee \neg p$ is inconsistent

$q \vee p$

q	p	$q \vee p$	$\neg(q \vee p)$	$(q \vee p) \wedge (\neg(q \vee p))$
T	T	T	F	F
T	T	T	F	F
F	T	T	F	F
F	T	T	F	F
T	F	F	T	F
T	F	F	T	F
F	F	T	F	F
F	F	T	F	F

$\therefore$ $q \vee p$ is inconsistent