Lec # 3:-

$P \rightarrow (q \rightarrow r)$

P	q	P → q
T	T	T
T	F	F
F	T	T
F	F	T

2^n

Combinations = Values$^{\text{Variables}}$.

5 Variables

3 Values.

$= 3^5 =$

	p	q
→	1	1
	1	0
	1	-1
	-1	-1

$\{1, 0, -1\}$.

5 Values. → Fill it. Do it

Example for Remembering (Logical Implication)

If I win election then I will lower the taxes.

let p_2 I will election. F

q_2 I will lower the taxes.

English word:- If p then q.

English word:- "if P Then q."

if q

$p \to q$ q whenever p.

Example:- "the home teams wins" p.

whenever it is raining." q

Express using logical expression.

let p: the home team wins.

q: it is raining.

p whenever q $q \to p$.

Biconditional.

p	q	$p \leftrightarrow q$.
T	T	T
T	F	F
F	T	F
F	F	T

Example: How to Remember Bi-conditional

You can take the flight iff you buy a ticket.

p = you can take the flight.
q = you buy the ticket.

p iff q.
p is necessary and sufficient for q.

1) Tautology :- $p \vee \neg p$
2) Contradiction :- $p \wedge \neg p$
3) Contingency :- ? ? $\wedge, \vee, \rightarrow, \leftrightarrow$ X.

5 examples.

$p \vee q \vee r$ Using TT.

Compound proposition :-

Ex-2.1 (P-g).

$(P \vee \neg q) \rightarrow (p \wedge q)$. ⇒ Do it.

Precedence:- BODMAS.

1 ¬
2 ∧
3 ∨
4 →
5 ↔ .

(Assignment)

System Consistency.

47-54 ⇒ will do it today before dinner.

Q11:- (c) Awais.

p_2 Grizzly bears have been seen in the area.

q_2 Hiking is safe on trail.

r_2 Berries are ripe along the trail.

Solution:- (For Hiking on the trail, it is necessary but not sufficient

is necessary but not sufficient

that Leslie is not the type along the trail panel for grizzly bears not to have been seen in area.

$P \leftrightarrow \neg\neg \wedge \neg P$.