

lec # 3:-

$$P \rightarrow (q \rightarrow r)$$

P	q	$P \rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

2 4

Combinations = Values Variables.

5 Variables  
3 Values.

2 3<sup>5</sup> 2

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

$P$	$Q$
1	1
1	0
1	-1
<div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> 5 values. </div> $\rightarrow$ Fill it. Do it	
-1	-1

Example for Remembering (Logic Implication)

If

 I win election 

then

  
I will lower the taxes.

let  $P =$  I will election.  $F$   
 $Q =$  I will lower the taxes.

English word:- If  $P$  then  $Q$ .

English word:-

if  $p$  then  $q$  -  
if  $q$

$$p \rightarrow q$$

$q$  whenever  $p$ .

Example:- "the home team wins"  $p$ .  
whenever "it is raining"  $q$ .

Express using logical expression.

Let  $p$  = the home team wins.

$q$  = it is raining.

$p$  whenever  $q$        $q \rightarrow p$ .

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 take the flight.  
 $q =$  you buy the ticket.

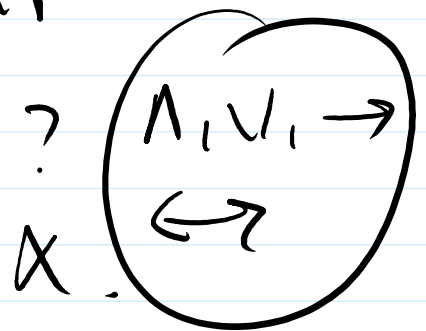
$P \text{ iff } q.$

$P$  is necessary and sufficient for  $q.$

1) Tautology:-  $P \vee \neg P$

2) Contradiction:-  $P \wedge \neg P$

3) Contingency:- ? ?



5 examples.

$P \vee q, \vee r$  Using TT.

Compound proposition:-

$P \vee \neg Q \rightarrow (P \wedge Q)$ .

$(P \vee \neg Q) \rightarrow (P \wedge Q) \Rightarrow$  Do it.

Precedence:-

BODMAS.

1	7
2	^
3	v
4	→
5	↔

(Assignment)  
System

Consistency.

47-54

$\Rightarrow$

I will do it  
today before dinner.

Q11:- (e) Aways.

$P_2$  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 P. the trail, it is necessary but not sufficient

is necessary but not sufficient  
that <sup>to</sup> bedding not the type along the  
hard panel for grazing leaves not  
to have been seen in area.

$$P \longleftrightarrow \neg T \wedge TP.$$