# Subject:Discrete Mathematics Topic:Conditional,Converse

## LISNA THOMAS ACADEMIC YEAR:2020-21

# CONDITIONAL, INVENOL, C **ONVERSE AND** CONTRAPOSITIVE EXAMPLES

#### Example1:

Conditional: If it is my birthday, then I get cake.(p->q)

Converse: If i get cake, then it is my birthday.(q->p)

Inverse: If it is not my birthday, then I do not get cake.(~p->~q)

Contrapositive: If I do not get cake, then it is not my birthday.(~q->~p)

Biconditional: It is my birthday iff i get cake( $p \Leftrightarrow q$ )

Example2:

Conditional: If I study hard, I shall succeed(p->q)

Inverse: If I don't study hard then I shall not succeed(~p->~q)

Converse; If I shall succeed , I study hard.(q->p)

Contrapositive: If I shall not succeed, I don't study hard.(~q->~p)

Biconditional: I study hard iff I shall succeed( $p \Leftrightarrow q$ )

#### Example 3:

Conditional: If it rains then I get wet.(p->q)

Inverse: If it does not rains then I don't get wet.(~p->~q)

Converse: If I get wet then it rains.(q->p)

Contrapositive: If I not get wet then it is not rains.(~q->~p)

Biconditional: It rains, iff I get wet( $p \Leftrightarrow q$ )

#### HW

- 1) Conditional: If it rains , then the atmospheric humidity increases.
- 2) If he studies well, then he will pass the examination
- 3) If it rains, then Ram does not drive the car.
- 4) If x is less than zero then x is not positive.
- 5) If it is raining then home team wins.

### ARGUMENTS

An argument is a list of statements called premises.Statements premises(Assumption,hypothesis) followed by the statement called conclusion.

The argument is either valid or invalid.



CRITICAL ROW:-A row in which all premises are true.

Eg:Prove that the argument is valid or not

1) p⇒q,p,q

P⇒q----p1,

Р-----р2,

Q-----C

р	q	p⇒q	р	q
Т	Т	Т	Т	Т
Т	F	F	Т	F
F	Т	Т	F	Т
F	F	Т	F	F