



TRINITY COLLEGE FOR WOMEN NAMAKKAL

Department of Mathematics

DISCRETE MATHEMATICS

19UMAE03-ODD Semester

Presented by

Dr. P. SARANYA

HOD-UG, Assistant Professor

Department of Mathematics

<http://www.trinitycollegenkl.edu.in/>

INTRODUCTION

Discrete Mathematics is Mathematics that deals with discrete objects. In this course will concerned with objects such as integers, propositions, sets, relations and functions, which are all discrete. We are going to learn concepts associated with them, their properties, and relationships among them and others.

STATEMENT

Definition:

A statement is a declarative sentence that is either true or false but not both.

Example

1. Chennai is the capital of Tamil Nadu---It is a statement.

Notation:

The statements will be denoted by distinct symbols selected from the capital letter A,B,C,....

T is used to denote true statement.

F is used to denote false statement.

ATOMIC STATEMENT

Definition:

Statements which cannot be further spit into simpler sentence are called atomic statements .

Example

Rama is a boy.

NEGATION

Definition:

The negation of a statement is generally formed by introducing the word 'not' at a proper place in the statement.

Notation:

If P denote a statement, then the negation of P is written as ' $\neg P$ ' and read as 'not P '

CONJUNCTION & DISJUNCTION

Definition:

The conjunction of two statements P and Q is the statement $P \wedge Q$ which is read as ('P and Q')

The disjunction of two statements P and Q is the statement $P \vee Q$ which is read as 'P or Q'

PROBLEM - I

Let P : I went to my school yesterday write the statement $\neg P$

Solution:

Given that P : I went to my school yesterday

Then $\neg P$: I did not go to my school yesterday.

PROBLEM - II

Let P: London is a city. What is $\neg P$?

Solution

Given P : London is a city

Then $\neg P$: London is not a city or

$\neg P$: It is not the case that London is a city

PROBLEM - III

Using the statement R: Mark is rich

H: Mark is happy

Write the following statement in symbolic form

- a) Mark is poor / but happy
- b) Mark is rich or unhappy
- c) Mark is neither rich or happy
- d) Mark is poor or he is both rich and unhappy

Solution

In symbolic form, the given statement is

- a) $\neg RAH$
- b) $R \vee (\neg H)$
- c) $\neg RA \neg H$
- d) $(\neg R) \vee (RA(\neg H))$

THANK YOU

<http://www.trinitycollegenkl.edu.in/>