

Al-Mustaqbal University
Department of Medical Instrumentation Techniques Engineering
Class: First stage
Subject: Basic Electrical Engineering Lab

Lecturer: Assistant Lecturer: **Shahla Yassin ,Ali Ibrahim**



Exp.7

Norton's Theorems



Theory:

Norton's Theorem is a principle in electrical and electronic engineering used to simplify and solve complex electrical circuits. The theory says that any electrical circuit consisting of an ideal current source and internal resistance can be represented by an ideal current source in parallel with a resistance. Thus, the original circuit can be replaced by a simple circuit containing a Norton current source and a Norton resistor.

Steps:

1. Determine the source to be switched: We begin by identifying the part of the electrical circuit that we want to simplify using Norton's principle

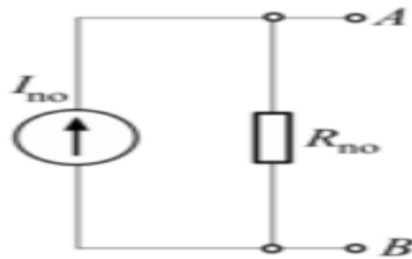
2. Calculate the equivalent resistance after eliminating all sources in the circuit

$$R_N = R_{Th}$$

3. Connecting all canceled sources and making a short circuit for the specified parties.

4. Calculating Norton current, which expresses the value of the current passing between the specified terminals

5. Draw a Norton circuit that contains a current source and a resistor in parallel



Norton's theory gives a way to simplify electrical circuits into simpler ones

It is similar to Thevenin's theory, the only difference between them is that the equivalent circuits are in a network

According to Thevenin's theory, electricity is replaced by a source of electromotive force

Connected in series with internal resistance while replacing it according to theorem

Norton with a current source connected in parallel with the internal resistance

Discussion:

- 1-What is the purpose of using Norton's Law?
- 2-What is the difference between Norton's theorem and Thevenin's theorem?