EGR 271

Circuit Theory I

File: N271O3

# Test #3 Overview

**Chapters covered**

* The following chapters and sections in **Electric Circuits, 9th Edition** by Nilsson
* Chapter 4, Sections 9 – 13
* Related Homework Assignments: HW #7

## **Chapter 4 Topics**

Real voltage sources and real current sources

* Models
* Characteristics

Source transformations

* Not always possible
* Be careful to protect important circuit variables

Superposition

* Applies to voltage and current, but not to power
* Kill independent sources by:
* Shorting voltage sources
* Opening current sources
* Never kill a dependent source

## Thevenin’s and Norton’s theorems – 3 key methods:

* Use source transformations to reduce the circuit into the form of a TEC or NEC
* Not always possible
* Not generally possible with dependent sources
* Find Rth = Req (seen by the load with independent sources killed). Also find either Voc or Isc .
* Find Voc and Isc (most general method – always works).

Maximum power transfer theorem

* The first step is to find the TEC
* Max power occurs when RL = Rth

