

Homework Assignment #5

Reading Assignment:

Chapter 4, Sections 9 - 13, in Electric Circuits, 8th Edition by Nilsson

Problem Assignment:

Note: Be sure to follow the required PROBLEM FORMAT for every assignment in this course.

Source transformation problems: 4.59a, 4.60a, 4.62a, 4.17 (find i_{Δ} using source transformations)

Superposition: 4.91, 4.94, 4.96

Thevenin's & Norton's theorems: 4.63, 4.64, 4.69, 4.70, 4.72

Maximum power transfer theorem: 4.79, 4.81, 4.84

Selected Answers:

(Note: Answers have also been provided for many problems that were not assigned. A good way to study for a test is to work extra problems.)

4.17) $i_{\Delta} = -1.5 \text{ A}$

4.60) $i_o = 4 \text{ mA}$

4.94) $v_o = 33.6 - 5.6 = 28 \text{ V}$

4.96) $i_o = -1.5 + 4.67 - 1.167 = 2 \text{ A}$

4.64) $V_{th} = 52 \text{ V}$, $R_{th} = 6 \Omega$

4.69) $V_{th} = 12.6 \text{ V}$, $R_{th} = 50 \text{ m}\Omega$, $I_N = 252 \text{ A}$, $R_{th} = 50 \text{ m}\Omega$

4.70) $V_{th} = 48 \text{ V}$, $R_{th} = 30 \Omega$

$R_o (\Omega)$	$i_o (\text{A})$	$v_o (\text{V})$
0	1.6	0
2	1.5	3
...		
70	0.48	33.6

4.72) $V_{oc} = 280 \text{ V}$, $I_{sc} = 14 \text{ mA}$, $R_{th} = 20 \text{ k}\Omega$

4.81) $V_{th} = 30 \text{ V}$, $R_{th} = 5 \text{ k}\Omega$, $P_{max} = 45 \text{ mW}$

4.84) a)

$R_o (\Omega)$	$P_o (\text{W})$
0	0
2	4.5
...	
70	16.128

c) $R_o = 30 \Omega$, $P_o(\text{max}) = 19.2 \text{ W}$