

Homework Assignment #6

Reading Assignment:

Chapter 6 in Electric Circuits, 8th Edition by Nilsson

Problem Assignment:

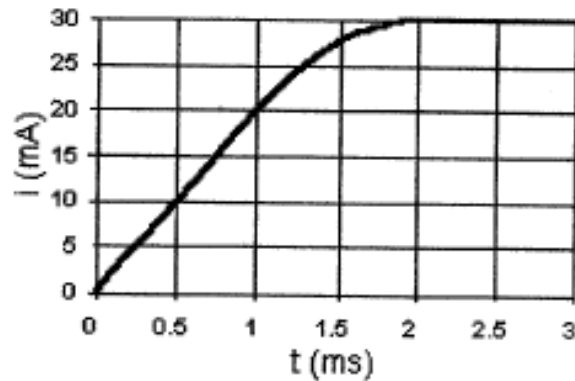
Note: Be sure to follow the required PROBLEM FORMAT for every assignment in this course.

Ch. 6 problems: 1, 2, 5, 8, 15, 17, 19, 21, 22, 26, 33

Selected Answers:

6.2) a) $i(t) = 20t \text{ A}$ for $0 \leq t \leq 1 \text{ ms}$
 $40t - 10,000t^2 - 0.01 \text{ A}$ for $1 \text{ ms} \leq t \leq 2 \text{ ms}$
 30 mA for $2 \text{ ms} \leq t \leq \infty$

[b]



6.5) a) $i(t) = -5t^2 \text{ A}$ for $0 \leq t \leq 2$
 $5t^2 - 40t + 40 \text{ A}$ for $2 \leq t \leq 6$
 $80t - 5t^2 - 320 \text{ A}$ for $6 \leq t \leq 10$
 $5t^2 - 120t + 680 \text{ A}$ for $10 \leq t \leq 12$
 -40 A for $12 \leq t \leq \infty$
 b) $v(t) = 0$ at $t = 0, 4, 8,$ and 12 , so $i(0) = 0 \text{ A}$, $i(4) = -40 \text{ A}$, $i(8) = 0 \text{ A}$, $i(12) = -40 \text{ A}$

6.8) a) $v(t) = -60e^{-2,000t} + 120e^{-8,000t} \text{ V}$ b) $t = 115.52 \text{ us}$

6.17) a) 1.25 uC b) 5 V c) 2 uJ

6.19) a) 125 uJ b) $A_2 = 25, A_1 = 262,500 \text{ V/s}$ c) $i = (90 - 157,500t)e^{-1500t} \text{ mA}$

6.33) $v_o(t) = 700e^{-80t} \sin(60t) \text{ V}$