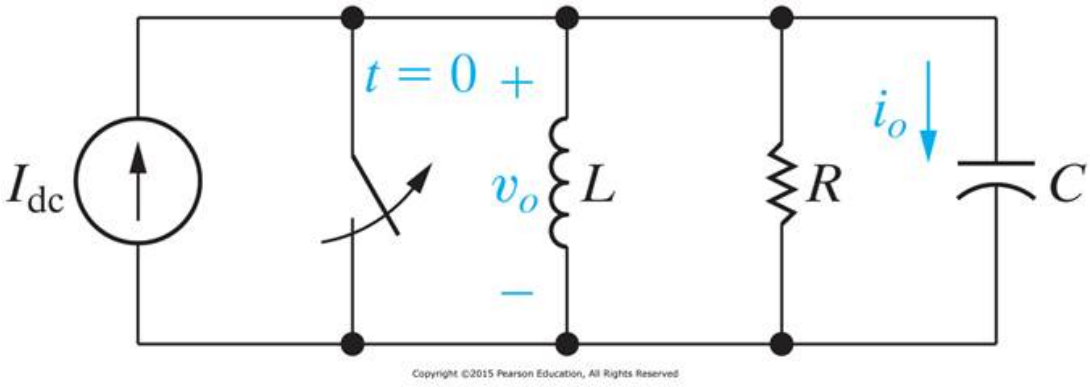
Started on	Tuesday, 7 March 2017, 10:05 PM
State	Finished
Completed on	Tuesday, 7 March 2017, 10:10 PM
Time taken	4 mins 35 secs
Marks	100.00/100.00
Grade	**10.00** out of 10.00 (**100**%)

Question 1

Correct

Mark 20.00 out of 20.00



P12.47_10ed

Given: $I_{DC} = 3$ Amps

The Laplace Transform of $v_0(t)$ and $i_0(t)$ are

$$V_0(s) = \frac{\frac{I_{DC}}{C}}{s^2 + s\frac{1}{RC} + \frac{1}{LC}}$$

$$I_0(s) = \frac{sI_{DC}}{s^2 + s\frac{1}{RC} + \frac{1}{LC}}$$

a) Use the initial-value theorem to find the initial value of $v_0(t = 0^+)$.

$v_0(t = 0^+) =$ 0 ✓ V

b) Use the final-value theorem to find the final value of $v_0(t = \infty)$. (∞ is infinity)

$v_0(t = \infty) =$ 0 ✓ V

c) Use the initial-value theorem to find the initial value of $i_0(t = 0^+)$.

$i_0(t = 0^+) =$ 3 ✓ A

d) Use the final-value theorem to find the final value of $i_0(t = \infty)$. (∞ is infinity)

$i_0(t = \infty) =$ 0 ✓ A

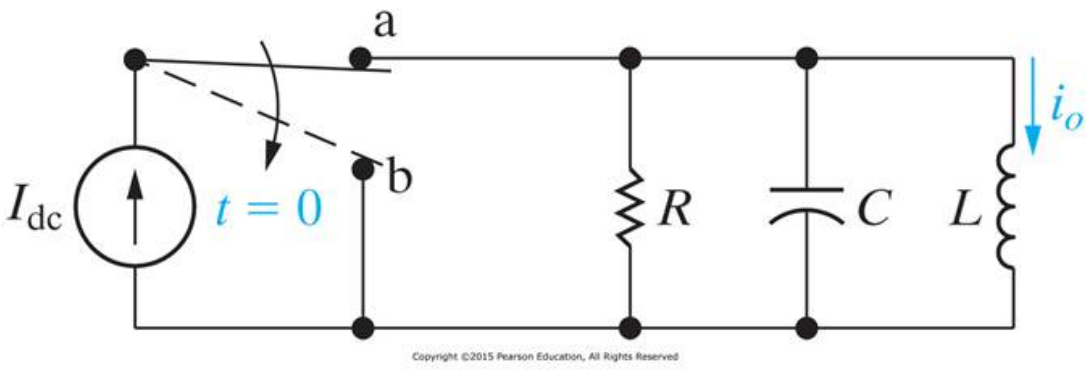
Correct

Marks for this submission: 20.00/20.00.

Question 2

Correct

Mark 20.00 out of 20.00



P12.48_10ed

The switch moves from position a to position b at t = 0.

Given: I_{DC} = 5 Amps

The Laplace Transform of $i_0(t)$ is $I_0(s) = \dfrac{I_{DC}\left[s + \frac{1}{RC}\right]}{s^2 + s\frac{1}{RC} + \frac{1}{LC}}$

a) Use the initial-value theorem to find the initial value of $i_0(t = 0^+)$.

$i_0(t = 0^+)$ = 5 ✓ A

b) Use the final-value theorem to find the final value of $i_0(t \to \infty)$. (∞ is infinity)

$i_0(t \to \infty)$ = 0 ✓ A

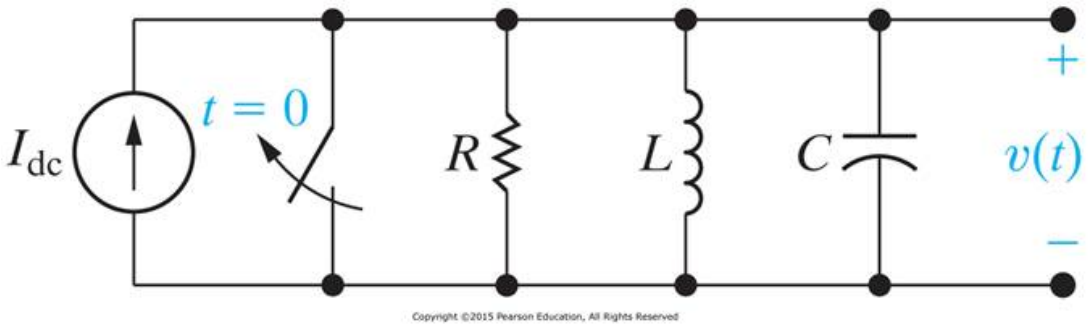
Correct

Marks for this submission: 20.00/20.00.

Question 3

Correct

Mark 20.00 out of 20.00



P12.46_10ed

The DC current source is replaced with a sinusoidal current source i(t) = 5 cos (20t) A.

Given: R = 1.25 Ω (Ohm) C = 50 mF (milli F) L = 200 mH (milli H)

With these given values the Laplace Transform of v(t) is

$$V(s) = \frac{100s^2}{(s^2+16s+100)(s^2+400)} = \frac{100s^2}{(s+8-j6)(s+8+j6)(s+0-j20)(s+0+j20)}$$

a) Use the initial-value theorem to find the initial value of v(t=0).

v(t) = 0 ✓ V

b) Can we use the final-value theorem on this Laplace function?

No ✓

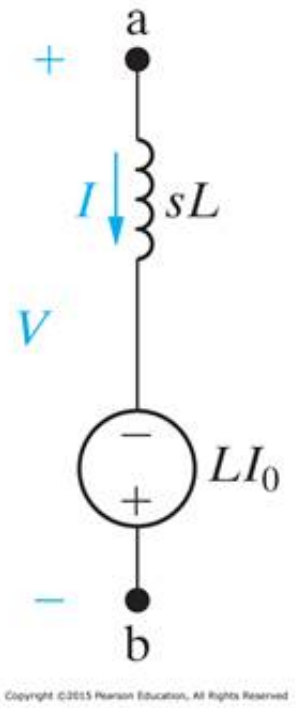
Correct

Marks for this submission: 20.00/20.00.

Question 4

Correct

Mark 20.00 out of 20.00



P13.03_10ed

Find the Norton Equivalent of this circuit.

Select one:

- a. $I_N = I_{ab} = -I_0/s$ $Z_{Th} = sL$ ✓
- b. $I_N = I_{ab} = I_0/s$ $Z_{Th} = sL$
- c. $I_N = I_{ab} = -I_0$ $Z_{Th} = sL$
- d. $I_N = I_{ab} = -I_0/s$ $Z_{Th} = 1/(sL)$

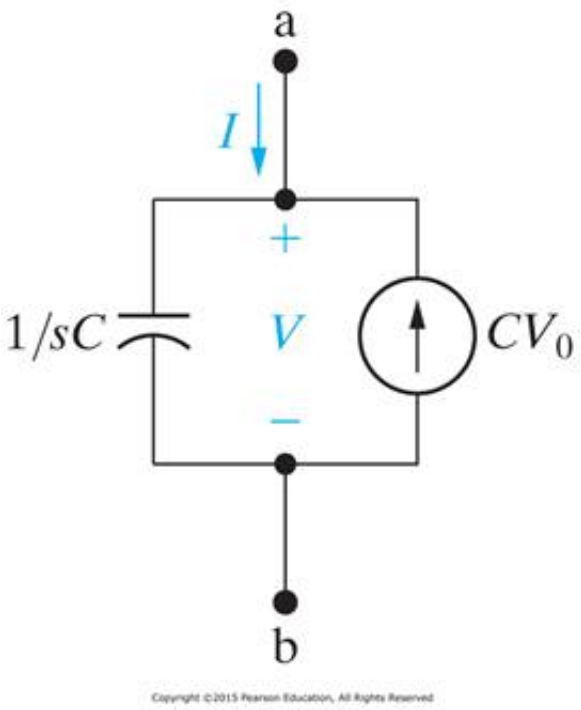
Correct

Marks for this submission: 20.00/20.00.

Question 5

Correct

Mark 20.00 out of 20.00



P13.02_10ed

Find the Thévenin Equivalent of this circuit.

Select one:

- a. $V_{Th} = V_{ab} = V_0/s$ $Z_{Th} = 1/(sC)$ ✓
- b. $V_{Th} = V_{ab} = V_0/s$ $Z_{Th} = sC$
- c. $V_{Th} = V_{ab} = V_0$ $Z_{Th} = sC$
- d. $V_{Th} = V_{ab} = 1/s$ $Z_{Th} = V_0/(sC)$

Correct

Marks for this submission: 20.00/20.00.