Unit 8 - Week 6

Week 6 Assignment 6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-09-11, 23:59 IST.

1) The voltage $V_L(t)$ (in V) across the inductor in the network shown in Fig. 1 is *1 point*

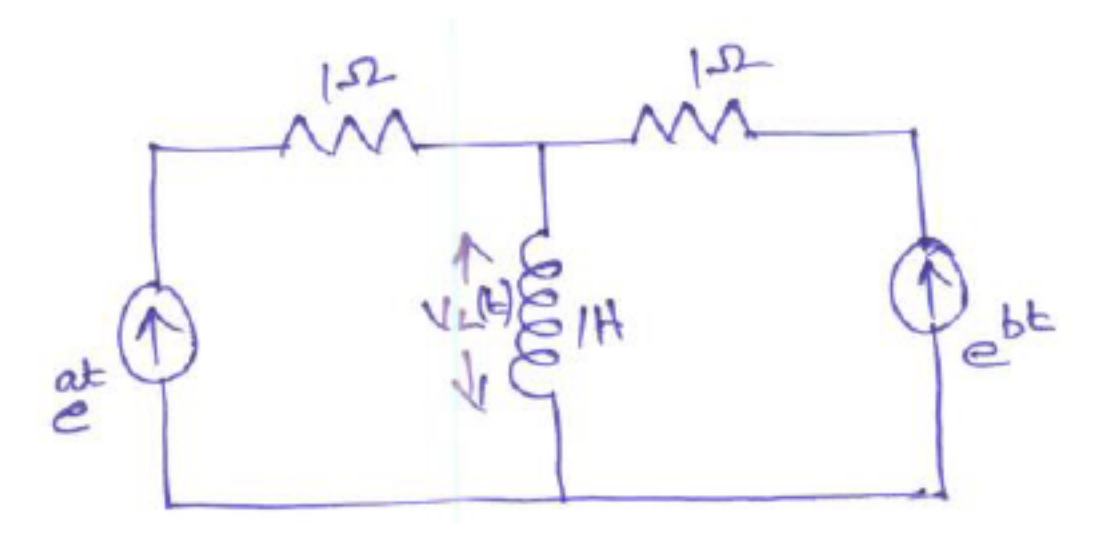

Fig. 1

a. $e^{at} - e^{bt}$
b. $e^{at} + e^{bt}$
c. $ae^{at} - be^{bt}$
d. $ae^{at} + be^{bt}$

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

2) A square waveform as shown in Fig. 2 is applied across 1 mH ideal inductor. The current through inductor will be? *1 point*

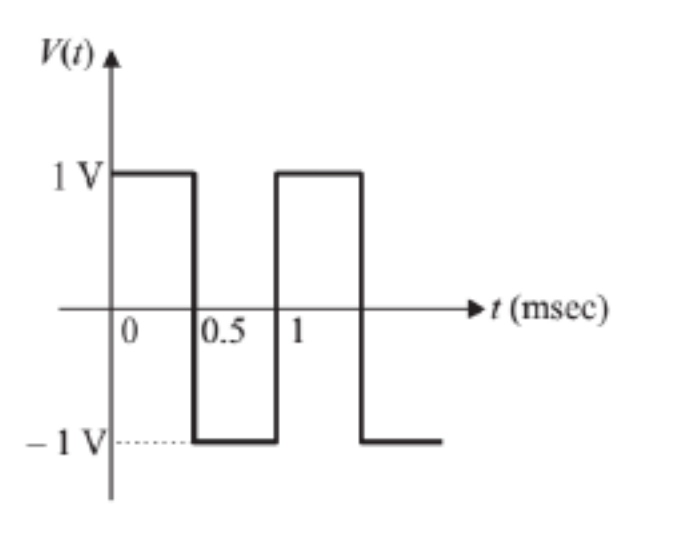

Fig. 2

a. triangular wave with peak amplitude of 0.5 Amp.
b. triangular wave with peak amplitude of 1.0 Amp.
c. triangular wave with peak amplitude of 2.0 Amp.
d. sine wave with peak amplitude of 0.5 Amp.

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

3) After how many time constants, the transient part in series RL excited with dc voltage will reach more than 99 percent of its final value? *1 point*

a. 2
b. 3
c. 4
d. 5

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

4) The switch in the circuit shown in Fig. 3 has been in position *'a'* for long time. At $t = 0$, the switch moves from position *'a'* to position *'b'*. The expression for current in inductor for $t > 0$ *1 point*

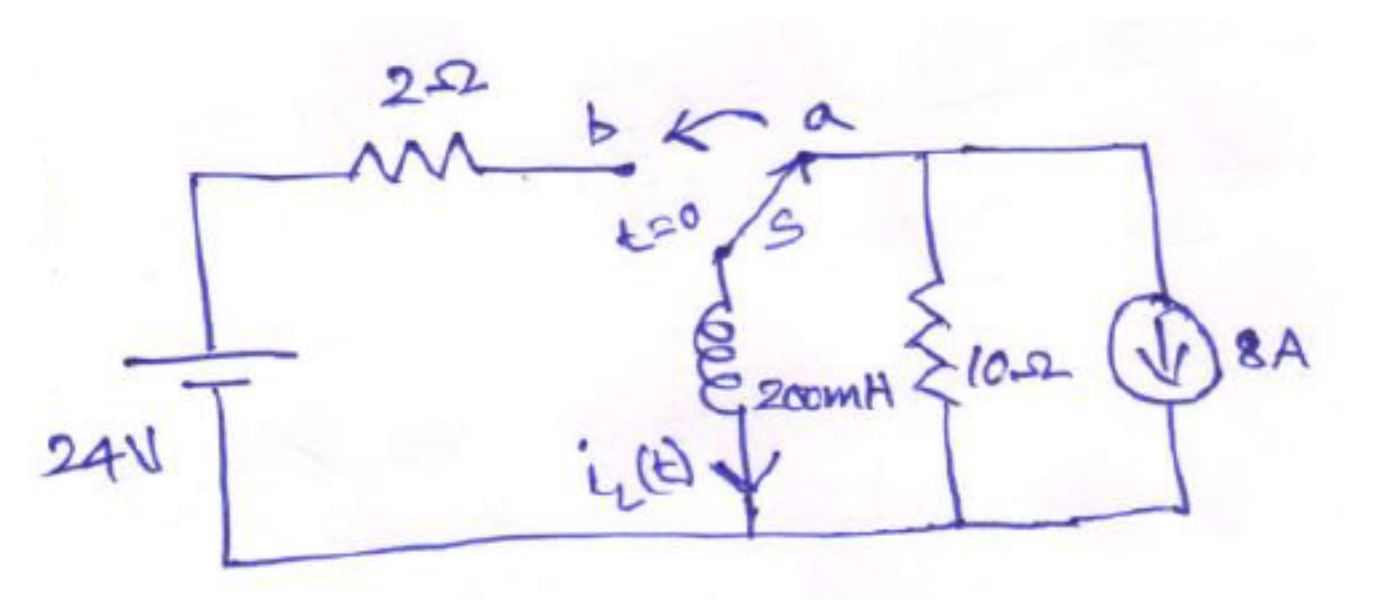

Fig. 3

a. $12 - 20e^{-10t}$
b. $12 + 20e^{-10t}$
c. $20 - 12e^{-10t}$
d. $20 + 12e^{-10t}$

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

5) For the circuit shown in Fig. 4 different time constants (in seconds) are given as *1 point*

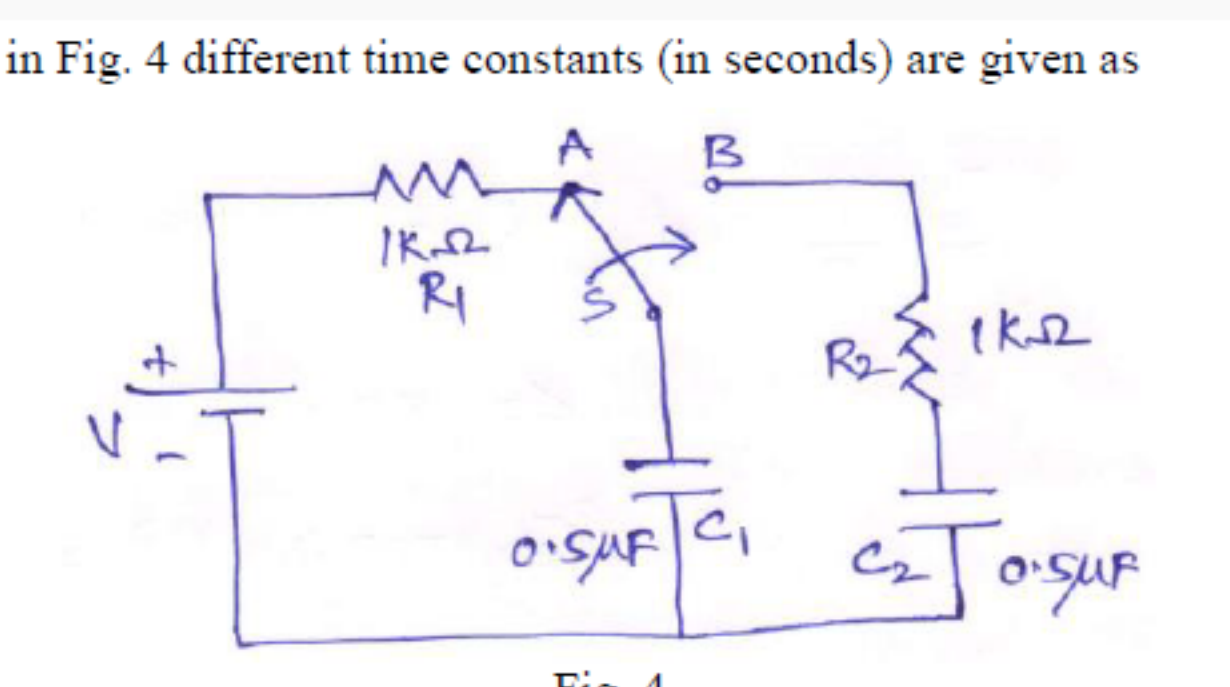

Fig. 4

1. $0.5x10^{-3}$
2. $2x10^{-3}$
3. $0.25x10^{-3}$
4. $1x10^{-3}$

What are the charging and discharging time constants of capacitor C_1 respectively?

a. 1, 2
b. 2, 3
c. 1, 3
d. 2, 4

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

6) In Fig. 5, the switch was closed for a long time before opening at $t = 0$. The voltage V_x at $t = 0^+$ will be? *1 point*

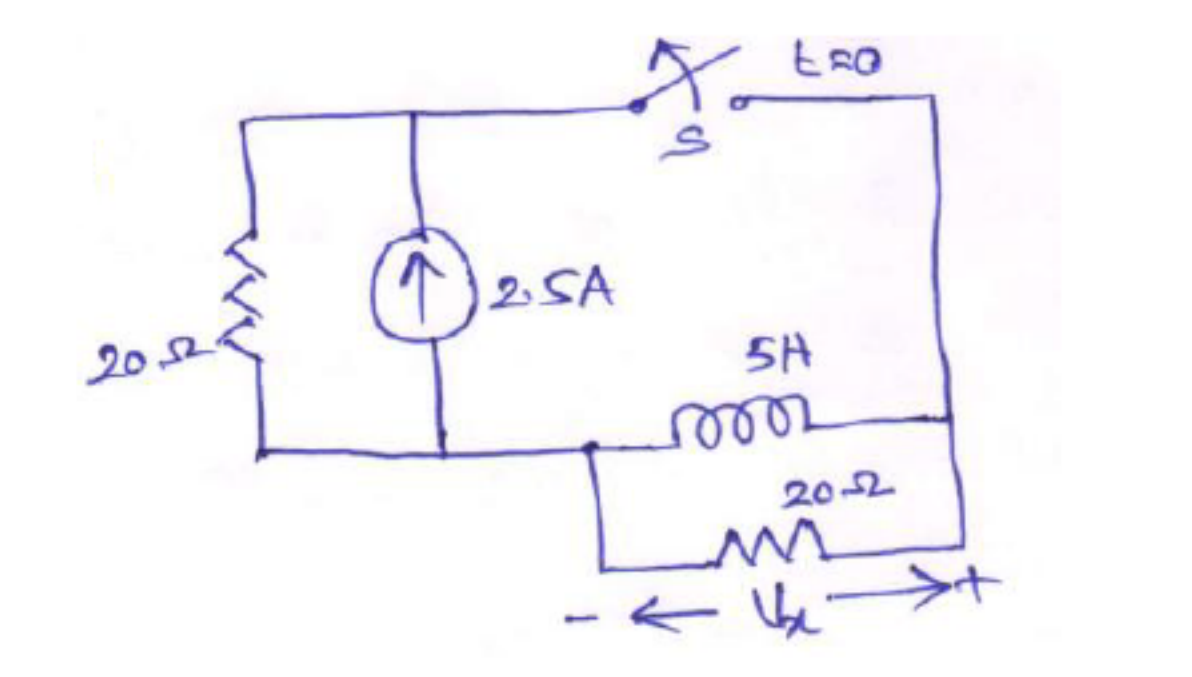

Fig. 5

a. 25 V
b. 50 V
c. -50 V
d. 0 V

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

7) In the circuit shown in Fig. 6, the initial charge on the capacitor is 2.5 milli Coloumbs, with the voltage polarity as indicated. The switch is closed at time $t = 0$. The current $i(t)$ at time t after the switch is closed is *1 point*

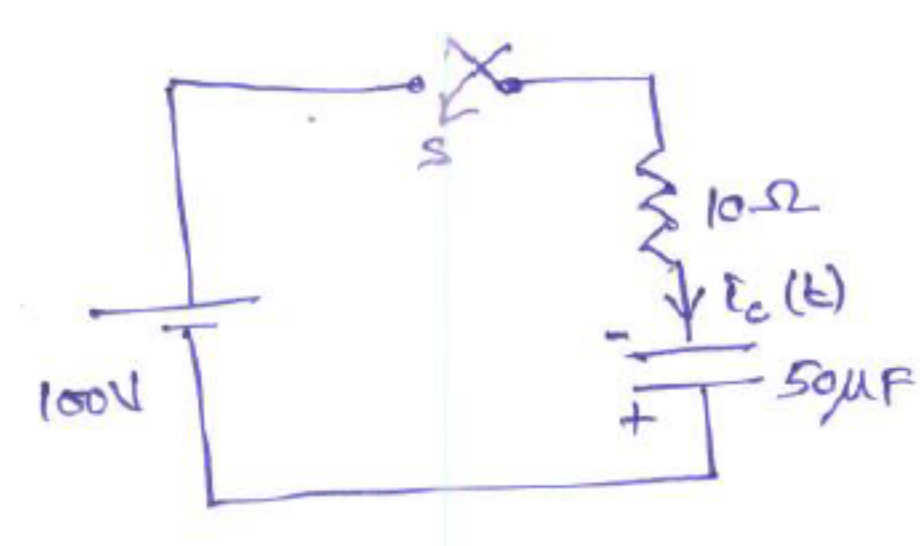

Fig. 6

a. $i(t) = 15e^{(-2x10^3 t)}$
b. $i(t) = 5e^{(-2x10^3 t)}$
c. $i(t) = 15e^{(2x10^3 t)}$
d. $i(t) = 5e^{(2x10^3 t)}$

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

8) The switch in the circuit shown in the Fig. 7, was open for a long time and is closed at $t = 0$. The current $i(t)$ flowing through switch (in Ampere) at $t = 0.5$ sec is ? *1 point*

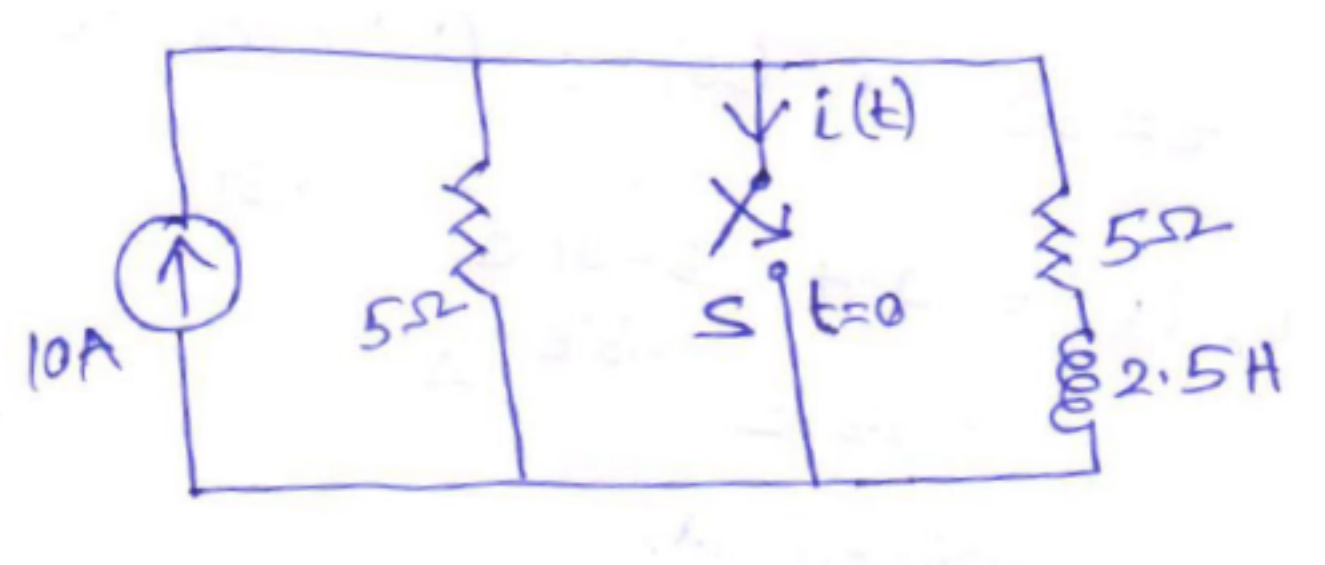

Fig. 7

a. 15.31 – 15.35 A
b. 8.14 – 8.18 A
c. 27.64 – 27.68 A
d. 53.80 – 53.84 A

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

9) In the circuit shown in Fig. 8, the switch is closed at $t=0$. Assuming zero initial conditions the value of $V_c(t)$ (in volts) at $t=1$ sec is? *1 point*

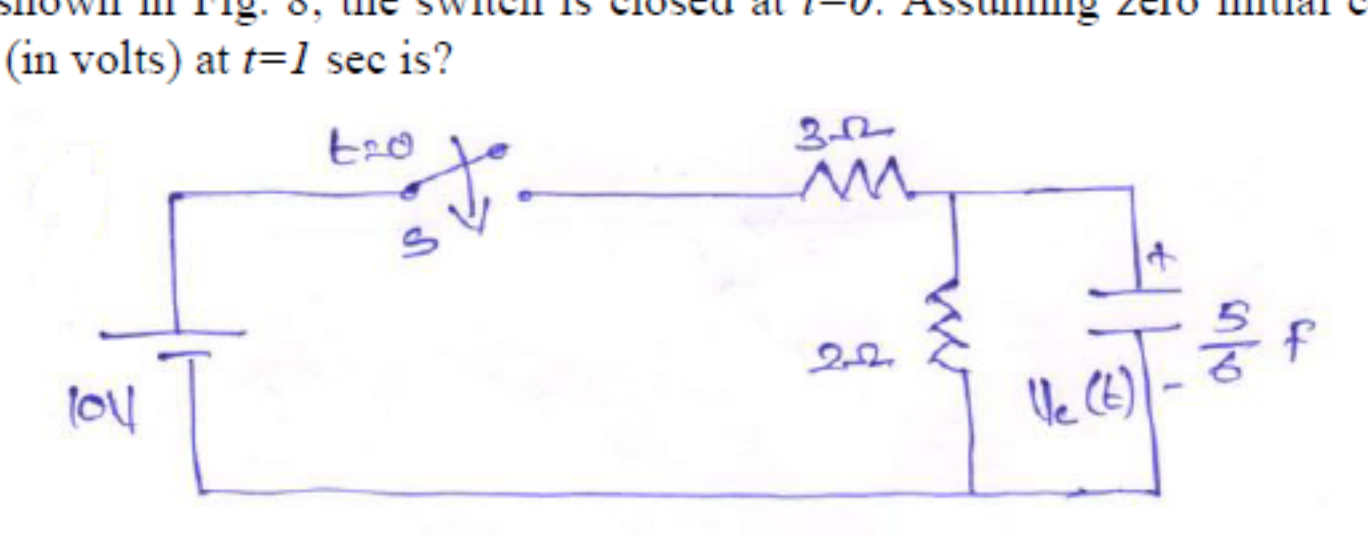

Fig. 8

a. 3.51 – 3.55
b. 2.51 – 2.55
c. 4.51 – 4.55
d. 5.51 – 5.55

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

10) At instant $t = 0$ the switch is closed in the circuit shown in Fig. 9. The current flowing (in Amp) in the inductor after switching is? *1 point*

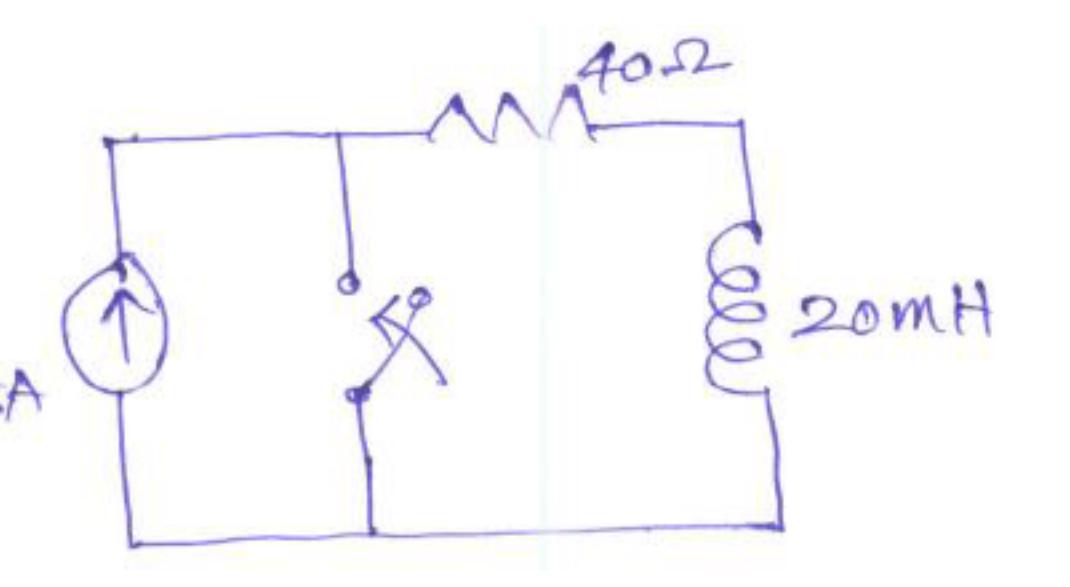

Fig. 9

a. $i(t) = 5e^{(-2x10^3 t)}$
b. $i(t) = 15e^{(-2x10^3 t)}$
c. $i(t) = 15e^{(2x10^3 t)}$
d. $i(t) = 5e^{(2x10^3 t)}$

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a.

11) Consider a DC voltage source connected to a series R-C circuit. When the steady state reaches, the ratio of the energy stored in the capacitor to the total energy supplied by the voltage source, is equal to *1 point*

a. 0.362
b. 0.770
c. 1
d. 0.5

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
d.

12) At $t=0$, suddenly a dc voltage of 30V, is applied to an initially relaxed series RL circuit having R=12Ω and L=18H. The energy stored (in Joules) in the magnetic field at $t=3$ sec is *1 point*

a. 48.2 - 50.2
b. 12.8 - 14.8
c. 41.1 - 43.1
d. 52.2 - 54.2

○ a.
○ b.
○ c.
○ d.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c.