Grade

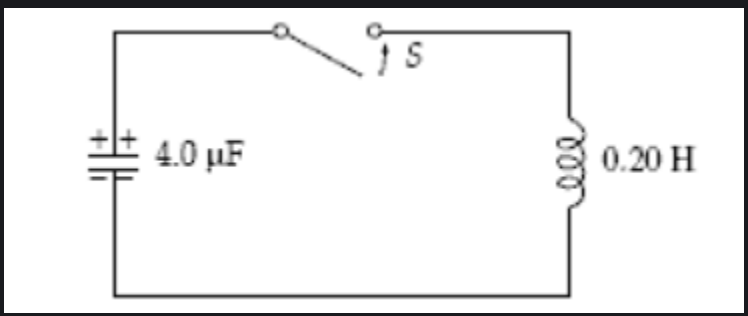
10.00 out of 10.00 (100%)

Question 1

Complete

Mark 1.00 out of 1.00

Before the switch is closed in the figure, the potential across the capacitor is 200 V. At some instant after the switch is closed, the instantaneous current is 0.70 A. What is the energy in the capacitor at this instant?



- 62 mJ
- 0.13 mJ
- 49 mJ
- 80 mJ
- 31 mJ

The correct answer is: **31 mJ**

Question 2

Complete

Mark 1.00 out of 1.00

A circuit contains two inductors of 6.0 mH inductance in series placed in parallel with an inductor of 8.0 mH inductance. After one of the 6.0 mH inductors burns out, the repair person wants to replace all three inductors with one inductor of equivalent inductance. Assuming inductors combine in series and parallel the same way resistors do, what inductance should she use?

- 4.8 mH
- 3.4 mH
- 20 mH
- 3 mH
- 11 mH

The correct answer is: **4.8 mH**

Question 3

Complete

Mark 1.00 out of 1.00

A square loop (length along one side = 20 cm) rotates in a constant magnetic field which has a magnitude of 2.0 T. At an instant when the angle between the field and the normal to the plane of the loop is equal to 20° and increasing at the rate of 10°/s, what is the magnitude of the induced emf in the loop?

- 14 mV
- 4.8 mV
- 2.2 mV
- 0.27 mV
- 13 mV

The correct answer is: **4.8 mV**

Question 4

Complete

Mark 1.00 out of 1.00

What is the inductance of a series *RL* circuit in which *R* = 1.0 Kohms if the current increases to one-third of its final value in 30 *u*s?

- 62 mH
- None of the above.
- 99 mH
- 49 mH
- 74 mH

The correct answer is:**74 mH**

Question 5

Complete

Mark 1.00 out of 1.00

A long solenoid has a radius of 4.0 cm and has 800 turns/m. If the current in the solenoid is increasing at the rate of 3.0 A/s, what is the magnitude of the induced electric field at a point 2.2 cm from the axis of the solenoid?

- 3.3×10^{-5} V/m
- 6.0×10^{-5} V/m
- 4.2×10^{-5} V/m
- 3.6×10^{-5} V/m
- 3.9×10^{-5} V/m

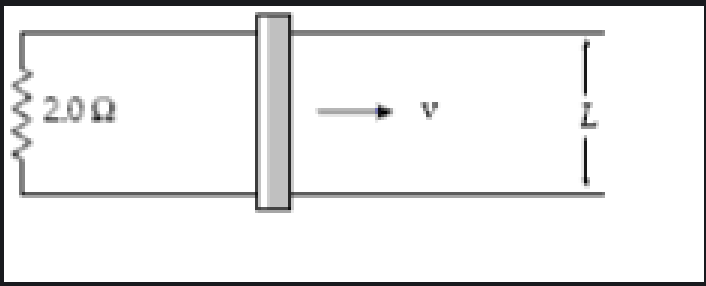
The correct answer is: **3.3×10^{-5} V/m**

Question 6

Complete

Mark 1.00 out of 1.00

In the arrangement shown, a conducting bar of negligible resistance slides along horizontal, parallel, frictionless conducting rails connected as shown to a 2.0-ohm resistor. A uniform 1.5-T magnetic field is perpendicular to the plane of the paper. If L = 60 cm, at what rate is thermal energy being generated in the resistor at the instant the speed of the bar is equal to 4.2 m/s?



- 7.8 W
- 9.3 W
- 7.1 W
- 8.6 W
- 1.8 W

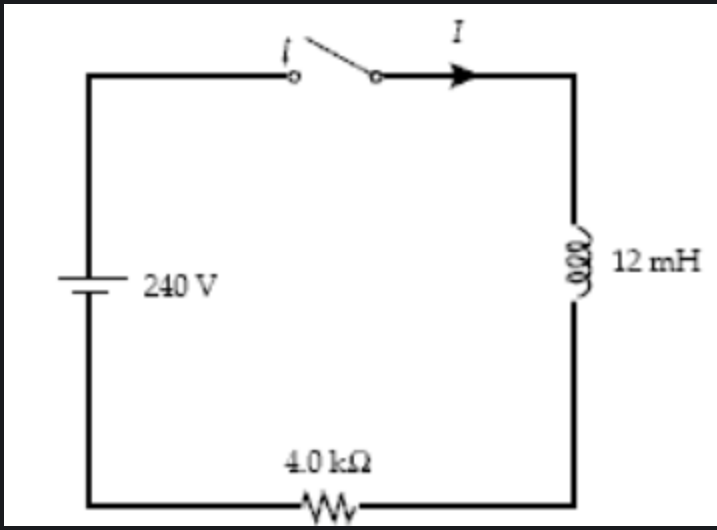
The correct answer is: **7.1 W**

Question 7

Complete

Mark 1.00 out of 1.00

The switch in the figure is closed at $t = 0$ when the current I is zero. When $I = 15$ mA, what is the potential difference across the inductor?



- 180 V
- 0 V
- 190 V
- 240 V
- 60 V

The correct answer is: **180 V**

Question 8

Complete

Mark 1.00 out of 1.00

A coil is wrapped with 300 turns of wire on the perimeter of a circular frame (radius = 8.0 cm). Each turn has the same area, equal to that of the frame. A uniform magnetic field is turned on perpendicular to the plane of the coil. This field changes at a constant rate from 20 to 80 mT in a time of 20 ms. What is the magnitude of the induced emf in the coil at the instant the magnetic field has a magnitude of 50 mT?

- 24 V
- 10 V
- 15 V
- 30 v
- 18 V

The correct answer is: **18 V**

Question 9

Complete

Mark 1.00 out of 1.00

A series *LC* circuit contains a 100 mH inductor, a 36.0 mF capacitor and a 12 V battery. The angular frequency of the electromagnetic oscillations in the circuit is:

- 36.0×10^{-4} rad/s.
- 2.78 rad/s.
- 16.7 rad/s
- 277 rad/s
- 6×10^{-2} rad/s.

The correct answer is: **16.7 rad/s**

Question 10

Complete

Mark 1.00 out of 1.00

An AC generator consists of 6 turns of wire. Each turn has an area of 0.040 m^2. The loop rotates in a uniform field (B = 0.20 T) at a constant frequency of 50 Hz. What is the maximum induced emf?

- 3.0 V
- 2.4 V
- 4.8 V
- 13 V
- 15 V

The correct answer is: **15 V**

Finish review

Jump to...

On the lands that we study, we walk, and we live, we acknowledge and respect the traditional custodians and cultural knowledge holders of these lands.

University of Wollongong

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