

PhysicsByAaryan

CSIR NET . GATE . JEST . BARC - Physics

RLC Circuits - CSIR NET Physics PYQs

Electronics . All PYQs (2015-2025) with answer key

6 questions . Answer key included

www.physicsbyaaryan.com . www.csirnetphysics.com

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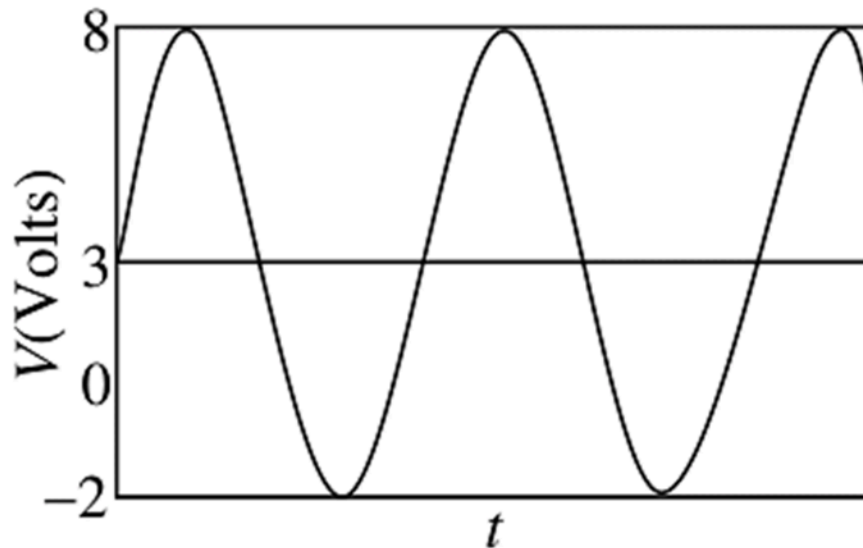
Q1. [June 2019] . 3.5 marks

Electronics > RLC Circuits

CSIR NET	2019 June	3.5M
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An ac signal of the type as shown in the figure, is applied across a resistor $R = 1\Omega$. The power dissipated across the resistor is

1. 12.5 W
2. 9 W
3. 25 W
4. 21.5 W



Q2. [June 2020] . 3.5 marks

Electronics > RLC Circuits

CSIR NET	2020 June	3.5M
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An inductor L , a capacitor C and a resistor R are connected in series to an AC source, $V = V_0 \sin \omega t$. If the net current is found to depend only on R , then

1. $C = 0$

2. $L = 0$

3. $\omega = 1/\sqrt{LC}$

4. $\omega = \sqrt{\frac{1}{LC} - \frac{R^2}{4L^2}}$

Q3. [June 2020] . 3.5 marks

Electronics > RLC Circuits

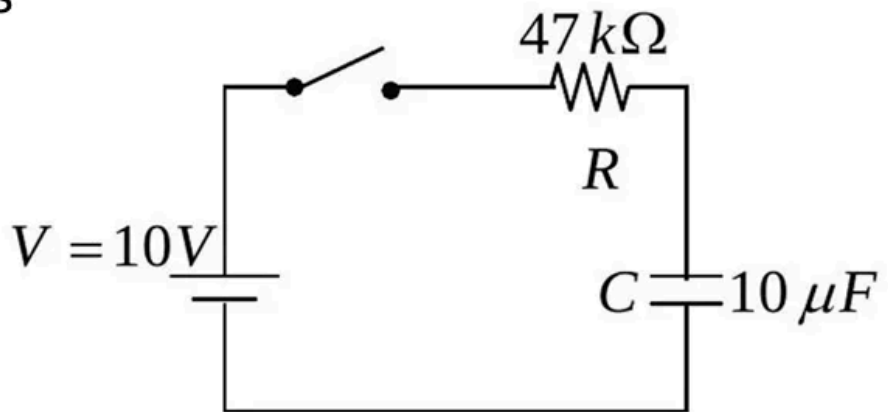
CSIR NET

2020 June

3.5M

A 10 V battery is connected in series to a resistor R and a capacitor C , as shown the figure. The initial charge on the capacitor is zero. The switch is turned on and the capacitor is allowed to charge to its full capacity. The total work done by the battery in this process is

1. 10^{-3} J
2. 2×10^{-3} J
3. 5×10^{-4} J
4. 47×10^{-2} J

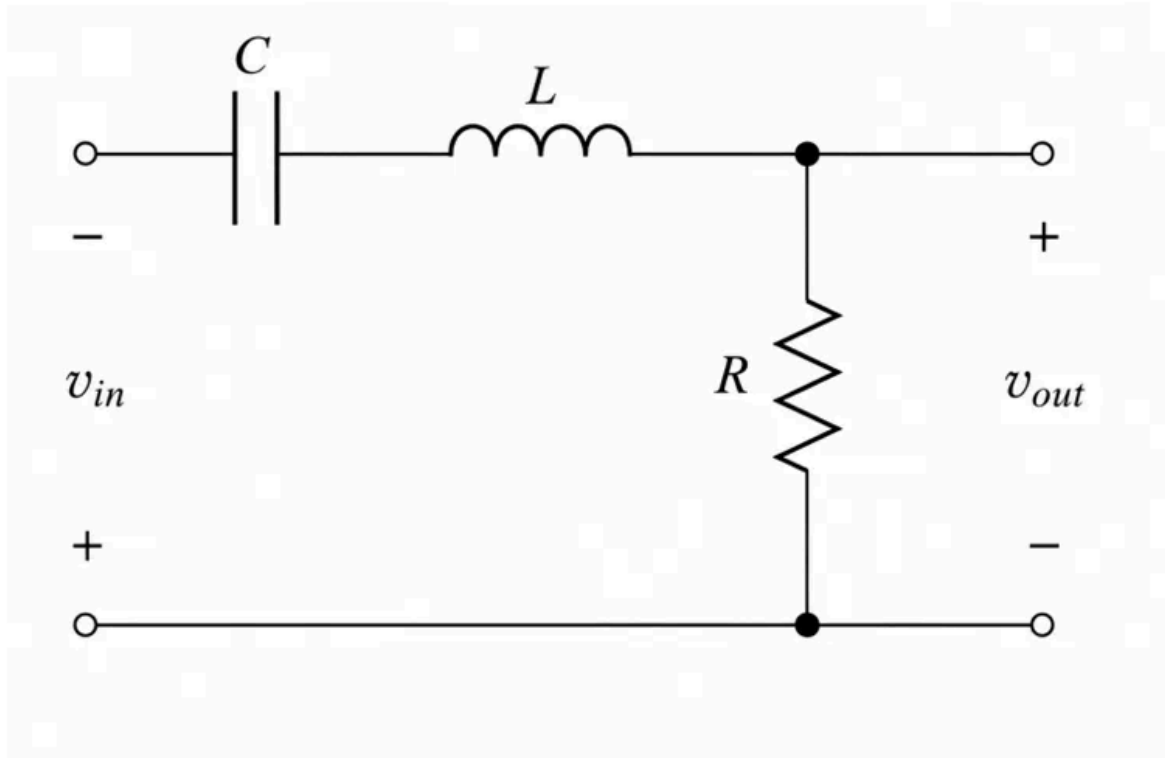


Q4. [June 2021] . 3.5 marks

Electronics > RLC Circuits

CSIR NET	2021 June	3.5M
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In the LCR circuit shown below, the resistance $R = 0.05 \Omega$, the inductance $L = 1 \text{ H}$ and the capacitance $C = 0.04 \text{ F}$.



If the input v_{in} is a square wave of angular frequency 1 rad/s , the output v_{out} is best approximated by a

1. Square wave of angular frequency 1 rad/s
2. Sine wave of angular frequency 1 rad/s
3. Square wave of angular frequency 5 rad/s
4. Sine wave of angular frequency 5 rad/s

Q5. [Dec 2024] . 3.5 marks

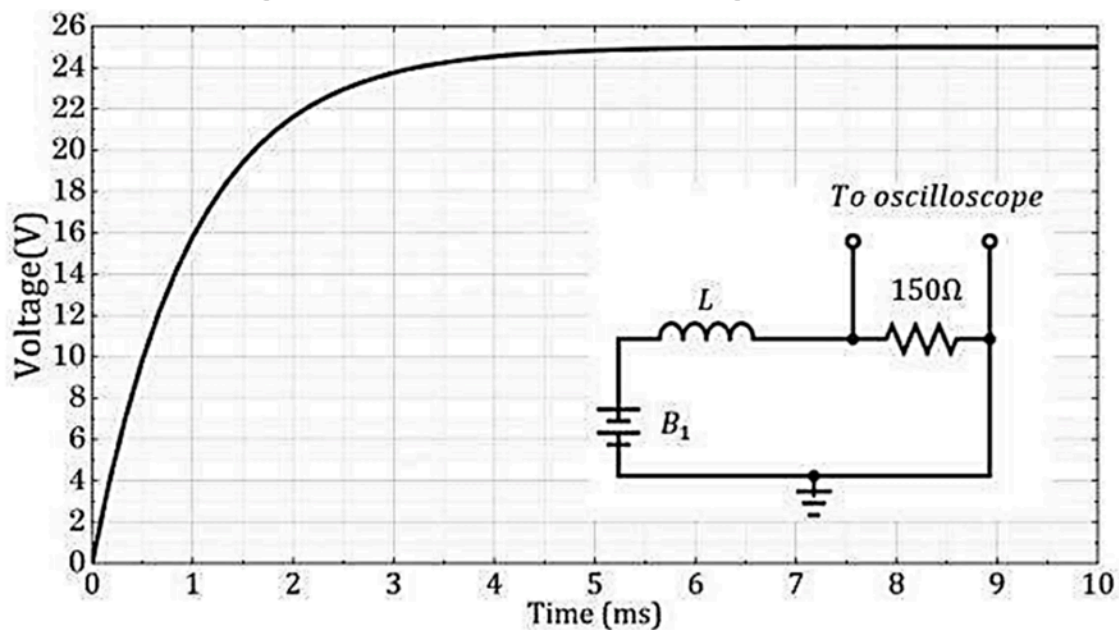
Electronics > RLC Circuits

CSIR NET

2024 Dec

3.5M

An ideal inductor L is connected in series to a 150Ω resistor as shown in the circuit (inset). When the circuit is driven by a battery B_1 , the voltage across the resistor as a function of time, as measured by an oscilloscope, is shown in the plot.



Based on this observation, the estimated value of L is closest to

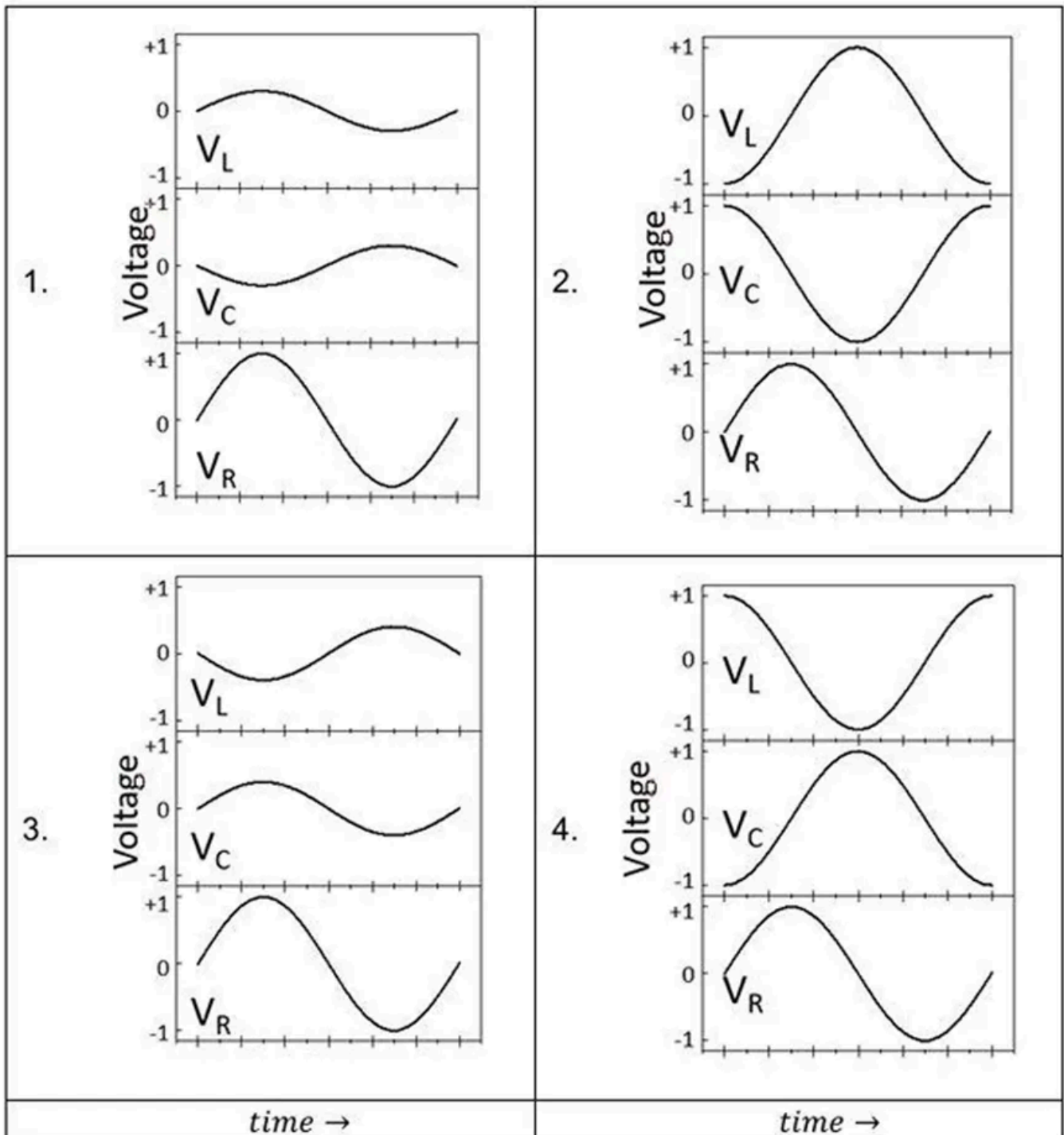
1. 50mH
2. 300 mH
3. 450 mH
4. 150 mH

Q6. [Dec 2025] . 3.5 marks

Electronics > RLC Circuits

CSIR NET	2025 Dec	3.5M	Electronics
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In an ideal series LCR circuit, which one of the following best represents the steady-state voltage waveforms V_L, V_C, V_R (only one cycle is shown) across L, C and R as a function of time at resonance frequency



Answer Key

6 questions . Subject and topic for quick revision

Q. No	Subject	Topic	Answer
Q1	Electronics	RLC Circuits	4
Q2	Electronics	RLC Circuits	3
Q3	Electronics	RLC Circuits	1
Q4	Electronics	RLC Circuits	4
Q5	Electronics	RLC Circuits	4
Q6	Electronics	RLC Circuits	4

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