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PHYSICS · EAPCET (EAMCET)

Alternating Current

Previous Year Questions with answers

143 questions · **131** papers · **2013–2026** · newest paper first

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What is in this PDF: every Alternating Current question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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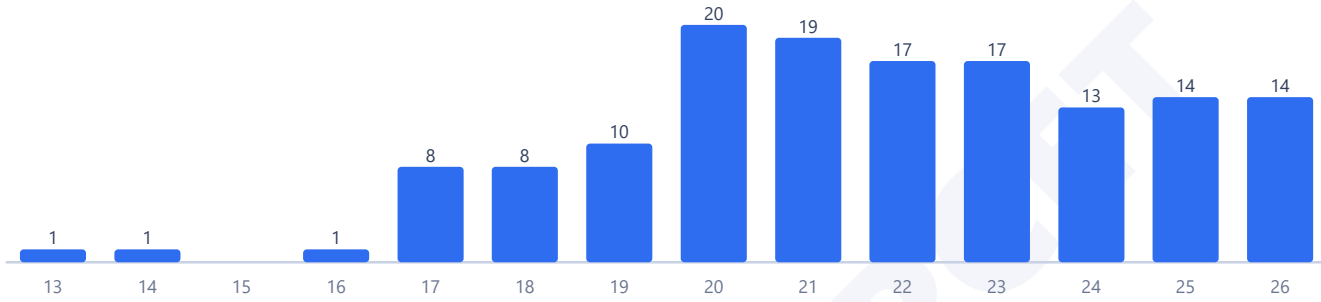
Chapter at a glance

2.4%	143	70 of 77	143 / 0
of Physics questions, 2022–2026	questions, 2013–2026	papers asked it, 2022–2026	MCQ / numerical, 2013–2026

Trend. Steady: 0.9 questions per paper in 2024–2026 against 1.1 in 2022–2023.

Questions per year



Counts are the questions we hold: 143 in 131 papers. 2 questions in this chapter came back in more than one paper.

Most-asked topics in this chapter (2013–2026)

LCR Circuits	93
AC Basics	29
Transformer & Generator	21

How often it comes up

Alternating Current provides focused questions on sinusoidal voltages, reactive components, and resonance in Class 12 physics. In the papers we hold for AP and TS EAPCET from 2022 to 2026, the chapter contributed 75 questions across 77 papers. That yields an average rate of 1.0 question per paper, making up 2.4% of all physics questions in that recent window. Taking in all years in our archive from 2010 to 2026, Alternating Current brought 143 questions across 149 papers, maintaining an average of 1.0 question per paper and a 2.4% subject share. For early years between 2010 and 2021, our records document 68 questions across 72 papers (2.4% share). Over the last three exam years from 2024 to 2026, the chapter supplied 41 questions across 46 papers, registering a 2.2% share. Comparing the last three years to early papers, the chapter's share of the subject is about the same, and compared to the recent five-year window it is also about the same.

State-wise breakdowns show comparable representation across both examination systems. AP EAPCET papers between 2022 and 2026 contributed 49 questions across 48 papers in our set, with 45 papers featuring at least one question (1.0 per paper, 2.6% share). Over the same timeframe, TS EAPCET contributed 26 questions across 29 papers in our set, with 25 papers carrying questions (0.9 per paper, 2.2% share). Alternating Current has appeared every year since 2022, though across all 77 recent papers in our collection, seven papers omitted it, meaning it did not feature in all 77 sittings. The chapter ranks 25th of 28 physics chapters by question share between 2022 and 2026. The busiest single sitting in our collection was 2020, which delivered 20 questions across 18 papers.

Most-asked topics

Questions group into three primary themes:

- **LCR Circuits**: This core section brought 51 questions between 2022 and 2026, out of 93 questions across all years in our archive. It tests series and parallel resonance, inductive and capacitive reactances, impedance triangles, phase angle, power factor cos φ, and quality factor Q.

- **AC Basics**: Recent papers delivered 17 questions, out of 29 questions in the complete record. Key topics cover peak, root-mean-square, and average values of sinusoidal waves, phasor representations, pure resistive, capacitive, or inductive circuits, and wattless current.
- **Transformer & Generator**: A smaller pool of 7 questions appeared in the recent five-year span, out of 21 questions overall. Questions examine transformer turn ratios, primary and secondary currents, efficiency, core eddy current losses, and alternating emf generated by rotating planar armatures.

What the questions look like

Series LCR circuit calculations dominate this chapter. A frequent question provides values for resistance R, inductance L, and capacitance C connected across a variable frequency source and asks for the resonant angular frequency ω_zero = 1 / √(L C), the circuit impedance at resonance, or the voltages across individual components. Because inductive and capacitive voltages are out of phase by π radians, students must remember that V_L and V_C cancel completely at series resonance, leaving the applied voltage entirely across resistor R.

Power dissipation problems represent another staple. Examiners provide time-dependent voltage and current equations, such as V(t) = V_zero sin(ω t) and I(t) = I_zero sin(ω t - φ), and ask for the average power P_avg = V_rms I_rms cos φ. When current lags voltage by π/two radians in a purely inductive coil, the power factor drops to zero, producing purely wattless current. Other recurring problems measure current when an inductor is connected first to a steady DC source and then to an AC supply, using the difference to isolate internal wire resistance from inductive reactance X_L = ω L.

How to practise it

Start by mastering root-mean-square definitions: for a sinusoidal alternating voltage V = V_zero sin(ω t), the rms voltage is V_rms = V_zero / √two. For a half-wave rectified wave, V_rms = V_zero / two. In purely reactive circuits, current leads voltage by ninety degrees across an ideal capacitor with reactance X_C = 1 / (ω C), while current lags voltage by ninety degrees across an ideal inductor with reactance X_L = ω L.

Next, study impedance and power relations in series LCR circuits. The total impedance is Z = √[R^2 + (X_L - X_C)^2], and phase angle φ satisfies tan φ = (X_L - X_C) / R. Average power consumed over a complete cycle is P = V_rms I_rms cos φ = I_{rms}^2 R, where the power factor is cos φ = R / Z. The wattless current component is I_wattless = I_rms sin φ, which carries zero average power dissipation.

Finally, master resonance and transformers. At series resonance, X_L = X_C, so impedance reaches its minimum possible value Z_min = R, and current peaks at I_max = V_rms / R. The sharpness of resonance is measured by the quality factor Q = ω_zero L / R = (1 / R) √(L / C). For an ideal step-up or step-down transformer, secondary to primary voltage ratio equals the turns ratio: V_s / V_p = N_s / N_p = I_p / I_s.

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Q1 AP EAPCET 2026 · 18 May · Shift 2 MCQ

An ac source has a peak voltage $\frac{200}{\sqrt{2}}$ V and frequency 50 Hz. The value of voltage after $\frac{1}{600}$ s from the start is

(A) 220 V
(B) $\frac{200}{\sqrt{2}}$ V
(C) $\frac{100}{\sqrt{2}}$ V
(D) 50 V

Answer: (C) $\frac{100}{\sqrt{2}}$ V · The council's preliminary key

Q2 AP EAPCET 2026 · 15 May · Shift 1 MCQ

In an ac circuit containing Resistance R and capacitance C, the current is I. Keeping the ac voltage constant, if the frequency is made $\frac{1}{3}$, the current is $\frac{I}{2}$, then the ratio of initial reactance to the resistance is

(A) $\left(\frac{3}{5}\right)^{\frac{1}{2}}$
(B) $\left(\frac{2}{5}\right)^{\frac{1}{2}}$
(C) $\left(\frac{1}{5}\right)^{\frac{1}{2}}$
(D) $\left(\frac{4}{5}\right)^{\frac{1}{2}}$

Answer: (A) $\left(\frac{3}{5}\right)^{\frac{1}{2}}$ · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 2 MCQ

In a series LCR circuit the resistance, inductive reactance and capacitive reactance are in the ratio $3:8:4$. If the potential difference across the resistor is 12 V, then the emf of the ac source used in the circuit is

(A) 48 V
(B) 16 V
(C) 180 V
(D) 20 V

Answer: (D) 20 V · The council's preliminary key

Q4 AP EAPCET 2026 · 14 May · Shift 1 MCQ

To have dissipative power in a LCR series circuit to be half

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(A) current amplitude $= 2\times$ (Maximum current amplitude)

(B) current amplitude $= \dfrac{(\text{Maximum current amplitude})}{2}$

(C) current amplitude $= (\text{Maximum current amplitude})^{\frac{1}{2}}$

(D) current amplitude $= \dfrac{(\text{Maximum current amplitude})}{\sqrt{2}}$

Answer: (D) current amplitude $= \dfrac{(\text{Maximum current amplitude})}{\sqrt{2}}$ · The council's preliminary key

Q5 AP EAPCET 2026 · 14 May · Shift 2 MCQ

An alternating supply of $225\ V$ is applied across a circuit with resistance 20Ω and impedance of 45Ω. The power dissipated in the circuit is

(A) $500\ W$

(B) $1000\ W$

(C) $550\ W$

(D) $2100\ W$

Answer: (A) $500\ W$ · The council's preliminary key

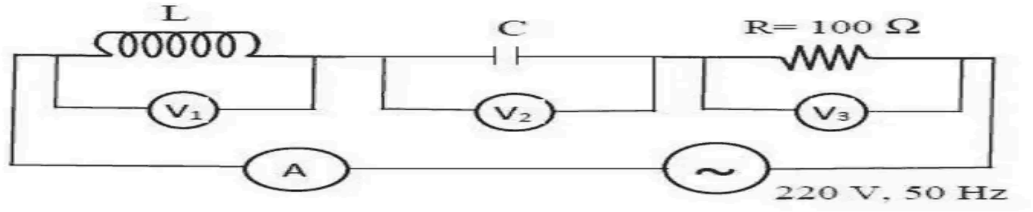
Q6 AP EAPCET 2026 · 13 May · Shift 1 MCQ

In the given circuit, the readings of voltmeters V_1 and V_2 are 300 V each. The reading of voltmeter V_3 and ammeter A are respectively

(see the figure above)

In the given circuit, the readings of voltmeters V_1 and V_2 are 300 V each. The reading of voltmeter V_3 and ammeter A are respectively

ఇచ్చిన వలయంలో $V_1 = V_2 = 300$ V అయితే, వోల్టమీటర్ V_3 మరియు అమ్మీటరు A రీడింగులు వరుసగా



Options :

1. 100 V, 2.0 A
2. 150 V, 2.2 A
3. 220 V, 2.0 A
4. 220 V, 2.2 A

(A) 100 V, 2.0 A
(B) 150 V, 2.2 A
(C) 220 V, 2.0 A
(D) 220 V, 2.2 A

Answer: (D) 220 V, 2.2 A · The council's preliminary key

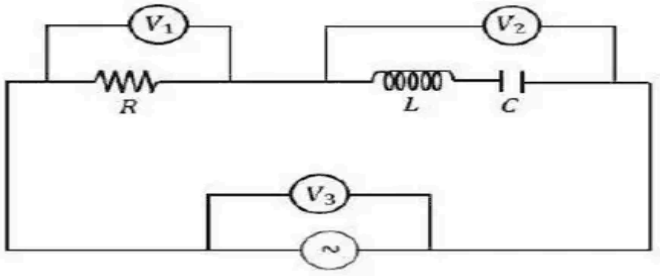
Q7 AP EAPCET 2026 · 13 May · Shift 2 MCQ

In the figure shown, three ac voltmeters are connected. At resonance,

(see the figure above)

In the figure shown, three ac voltmeters are connected. At resonance,

ఇచ్చిన వలయంలో మూడు ac వోల్టు మీటర్లు కలుపబడ్డాయి. అనునాదం వద్ద



Options :

1. $V_2 = 0$
2. $V_1 = 0$
3. $V_3 = 0$
4. $V_3 = V_2 \neq 0$

(A) $V_2 = 0$
(B) $V_1 = 0$
(C) $V_3 = 0$
(D) $V_3 = V_2 \neq 0$

Answer: (A) $V_2 = 0$ · The council's preliminary key

Q8 AP EAPCET 2026 · 12 May · Shift 1 MCQ

In an a.c. circuit Voltage,V and current, I are given by

$V = 100\sin(100t)$ volt, $I = 100\sin\left(100t + \frac{\pi}{3}\right)$ mA. The power dissipated in the circuit is

(A) 10^4 Watt
(B) 10 Watt
(C) 2.5 Watt
(D) 5 Watt

Answer: (C) 2.5 Watt · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 2 MCQ

To have resonance in a LCR series circuit, the impedance (Z) value

(A) $Z > R$
(B) $Z = R$
(C) $Z < R$
(D) $Z = 0$

Answer: (B) $Z = R$ · The council's preliminary key

Q10 TS EAPCET 2026 · 11 May · Shift 1 MCQ

If a resistor of resistance $\frac{125}{\sqrt{3}}\ \Omega$ and a capacitor of capacitance $\frac{40}{\pi}\ \mu\text{F}$ are connected in series with an ac supply of frequency 100 Hz, then the phase difference between current and voltage in the circuit is

(A) 30°
(B) 60°
(C) 45°
(D) 90°

Answer: (B) 60° · The council's preliminary key

Q11 TS EAPCET 2026 · 11 May · Shift 2 MCQ

When an inductor and a resistor are connected in series to an ac source, the power factor of the circuit is $\frac{2}{\sqrt{13}}$. If the same resistor and a capacitor are connected in series to the same ac source, then the power factor of the circuit is $\frac{1}{\sqrt{2}}$. If these inductor, capacitor and resistor are connected in series to the same ac source, then the ratio of the resistance and impedance of the LCR circuit is

(A) $1 : \sqrt{7}$
(B) $2 : \sqrt{5}$
(C) $2 : \sqrt{7}$
(D) $1 : \sqrt{5}$

Answer: (B) $2 : \sqrt{5}$ · The council's preliminary key

Q12 TS EAPCET 2026 · 10 May · Shift 1 MCQ

For an LCR series circuit at resonance, the incorrect statement is

(A) Power factor becomes one
(B) The phase angle between voltages across resistor and source is 90°
(C) Power dissipation is maximum
(D) Impedance is minimum

Answer: (B) The phase angle between voltages across resistor and source is 90° · The council's preliminary key

Q13 TS EAPCET 2026 · 10 May · Shift 2 MCQ

In an ac circuit, if the rms value of current is 2 A and the wattless current is $\sqrt{3}$ A, then the power factor of the circuit is

(A) $\frac{\sqrt{3}}{2}$
(B) 0.3
(C) 0.5
(D) $\frac{1}{\sqrt{3}}$

Answer: (C) 0.5 · The council's preliminary key

Q14 TS EAPCET 2026 · 9 May · Shift 2 MCQ

When an inductor is connected to a 200 V dc supply, the current through it is 5 A and when the same inductor is connected to a 200 V ac supply of angular frequency $300\ \mathrm{rad\,s^{-1}}$, the current through it is 4 A. The inductance of the inductor is

(A) 100 mH
(B) 200 mH
(C) 50 mH
(D) 75 mH

Answer: (A) 100 mH · The council's preliminary key

Q15 AP EAPCET 2025 · 27 May · Shift 1 MCQ

An ac source of internal resistance $10^3\ \Omega$ is connected to a transformer. The ratio of the number of turns in the primary to the number of turns in the secondary to match the source to a load resistance of $10\ \Omega$ is

(A) $1:10$
(B) $10:1$
(C) $2:5$
(D) $5:2$

Answer: (B) $10:1$ · The council's preliminary key

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Q16 AP EAPCET 2025 · 26 May · Shift 1 MCQ

A coil of inductive reactance $\frac{1}{\sqrt{3}}\ \Omega$ and a resistance $1\ \Omega$ are connected in series to a 200 V, 50 Hz ac source. The time lag between voltage and current is

(A) $\frac{1}{1200}$ s
(B) $\frac{1}{600}$ s
(C) $\frac{1}{400}$ s
(D) $\frac{1}{800}$ s

Answer: (B) $\frac{1}{600}$ s · The council's preliminary key

Q17 AP EAPCET 2025 · 26 May · Shift 2 MCQ

In a series LCR circuit, the voltages across the capacitor, resistor and inductor are in the ratio $2:3:6$. If the voltage of the ac source in the circuit is 240 V, then the voltage across the inductor is

(A) 240 V
(B) 144 V
(C) 96 V
(D) 288 V

Answer: (D) 288 V · The council's preliminary key

Q18 AP EAPCET 2025 · 24 May · Shift 1 MCQ

If the voltage and current in an ac circuit are respectively $50\sin(50t)$ V and $50\sin\left(50t+\frac{\pi}{4}\right)$ mA, then the power dissipated in the circuit is nearly

(A) 1.296 W
(B) 0.648 W
(C) 0.884 W
(D) 1.768 W

Answer: (C) 0.884 W · The council's preliminary key

Q19 AP EAPCET 2025 · 23 May · Shift 1 MCQ

If a resistor of resistance $4\,\Omega$, a capacitor of capacitive reactance $6\,\Omega$ and an inductor of inductive reactance $9\,\Omega$ are connected in series with an ac source, then the impedance of the circuit is

(A) $19\,\Omega$
(B) $11\,\Omega$
(C) $7\,\Omega$
(D) $5\,\Omega$

Answer: (D) $5\,\Omega$ · The council's preliminary key

Q20 AP EAPCET 2025 · 23 May · Shift 2 MCQ

In a series resonant LCR circuit, for the power dissipated to become half of the maximum power dissipated, the current amplitude is

(A) $\frac{1}{\sqrt{2}}$ times its maximum value.
(B) $\frac{1}{2}$ times its maximum value.
(C) twice its maximum value.
(D) $\sqrt{2}$ times its maximum value.

Answer: (A) $\frac{1}{\sqrt{2}}$ **times its maximum value.** · The council's preliminary key

Q21 AP EAPCET 2025 · 22 May · Shift 1 MCQ

For better tuning of a series LCR circuit in a communication system, the preferred combination is

(A) $R = 20\ \Omega;\ L = 15\ \text{H};\ C = 35\ \mu\text{F}$
(B) $R = 15\ \Omega;\ L = 40\ \text{H};\ C = 20\ \mu\text{F}$
(C) $R = 25\ \Omega;\ L = 15\ \text{H};\ C = 45\ \mu\text{F}$
(D) $R = 15\ \Omega;\ L = 20\ \text{H};\ C = 45\ \mu\text{F}$

Answer: (B) $R = 15\ \Omega;\ L = 40\ \text{H};\ C = 20\ \mu\text{F}$ · The council's preliminary key

Q22 AP EAPCET 2025 · 22 May · Shift 2 MCQ

A resistor of $450\,\Omega$ and an inductor are connected in series to an ac source of frequency $\frac{75}{\pi}$ Hz. If the power factor of the circuit is 0.6, then the inductance connected in the circuit is

(A) 6 mH
(B) 4 H
(C) 4 mH
(D) 6 H

Answer: (B) 4 H · The council's preliminary key

Q23 AP EAPCET 2025 · 21 May · Shift 2 MCQ

In an LCR series circuit, if the potential differences across inductor, capacitor and resistor are 60 V, 30 V and 40 V respectively, then the ac voltage applied to the circuit is

(A) 50 V
(B) 70 V
(C) 130 V
(D) 60 V

Answer: (A) 50 V · The council's preliminary key

Q24 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The inductance L, Capacitance C and resistance R are the values of the components connected in series to an ac source of angular frequency ω. The inductive and capacitive reactances are X_L and X_C respectively. If the circuit is purely resistive, then

(A) $L = C$
(B) $X_L = X_C$
(C) $\omega L = \omega C$
(D) $R = L = C$

Answer: (B) $X_L = X_C$ · The council's preliminary key

Q25 TS EAPCET 2025 · 3 May · Shift 1 MCQ

An electric bulb, an open coil inductor, an ac source and a key are all connected in series to form a closed circuit. The key is closed and after some time an iron rod is inserted into the interior of the inductor, then

(A) The glow of the bulb increases
(B) The glow of the bulb remains unchanged
(C) The glow of the bulb decreases
(D) The bulb does not glow

Answer: (C) The glow of the bulb decreases · The council's preliminary key

Q26 TS EAPCET 2025 · 3 May · Shift 2 MCQ

A capacitor and a resistor of resistance $100\sqrt{3}\,\Omega$ are connected in series to an ac source of voltage $100\sin(200t)\,\mathrm{V}$, where 't' is time in second. If the phase difference between the voltage and the current in the circuit is 30°, then the capacitance of the capacitor is

(A) $30\ \mu\mathrm{F}$
(B) $50\ \mu\mathrm{F}$
(C) $100\ \mu\mathrm{F}$
(D) $150\ \mu\mathrm{F}$

Answer: (B) $50\ \mu\mathrm{F}$ · The council's preliminary key

Q27 TS EAPCET 2025 · 2 May · Shift 1 MCQ

The frequency of an alternating voltage is 50 Hz. The time taken for instantaneous voltage to increase from zero to half of its peak voltage is

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(A) $\frac{1}{800}$ s
(B) $\frac{1}{600}$ s
(C) $\frac{1}{300}$ s
(D) $\frac{1}{200}$ s

Answer: (B) $\frac{1}{600}$ s · The council's preliminary key

Q28 TS EAPCET 2025 · 2 May · Shift 2 MCQ

An inductor and a resistor are connected in series to an ac supply. If the potential differences across the inductor and the resistor are 180 V and 240 V respectively, then the voltage of the ac supply is

(A) 300 V
(B) 420 V
(C) 60 V
(D) 210 V

Answer: (A) 300 V · The council's preliminary key

Q29 AP EAPCET 2024 · 23 May · Shift 1 MCQ

An alternating current is given by $i = (3\sin\omega t + 4\cos\omega t)$ A. The rms current will be

(A) $\frac{7}{\sqrt{2}}$ A
(B) $\frac{1}{\sqrt{2}}$ A
(C) $\frac{5}{\sqrt{2}}$ A
(D) $\frac{3}{\sqrt{2}}$ A

Answer: (C) $\frac{5}{\sqrt{2}}$ A · The council's preliminary key

Q30 AP EAPCET 2024 · 22 May · Shift 1 MCQ

A 50 Hz AC circuit has a 10 mH inductor and a 2 Ω resistor in series. The value of capacitance to be placed in series in the circuit to make the circuit power factor as unity is

(A) 1.014×10^{-6} F
(B) 1.014×10^{-3} F
(C) 2.6×10^{-3} F
(D) 4.125×10^{-3} F

Answer: (B) 1.014×10^{-3} F · The council's preliminary key

Q31 AP EAPCET 2024 · 22 May · Shift 2 MCQ

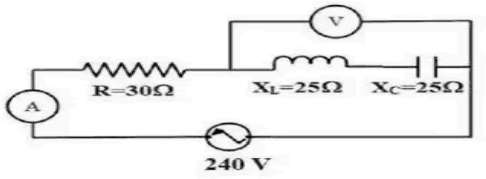
In the circuit shown in the figure, neglecting the source resistance, the voltmeter and ammeter readings respectively are

(see the figure above)

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instructi
Time : 0

In the circuit shown in the figure, neglecting the source resistance, the voltmeter and ammeter readings respectively are

క్రింది వలయంలో, జనక నిరోధాన్ని విస్మరిస్తే, ఓల్ట్ మీటరు మరియు అమ్మీటరు రీడింగులు వరుసగా



Options :

1. 0 V, 8 A
2. 150 V, 3 A
3. 150 V, 6 A
4. 0 V, 3 A

(A) $0\ \text{V}, 8\ \text{A}$
(B) $150\ \text{V}, 3\ \text{A}$
(C) $150\ \text{V}, 6\ \text{A}$
(D) $0\ \text{V}, 3\ \text{A}$

Answer: (A) $0\ \text{V}, 8\ \text{A}$ · The council's preliminary key

Q32 AP EAPCET 2024 · 21 May · Shift 2 MCQ

A resistor of resistance R, inductor of inductive reactance 2R and a capacitor of capacitive reactance X_c are connected in series to an a.c. source. If the series LCR circuit is in resonance, then the power factor of the circuit and the value X_c are respectively

(A) 0.5 and 4R
(B) 1 and 2R
(C) 0.5 and 2R
(D) 1 and 4R

Answer: (B) 1 and 2R · The council's preliminary key

Q33 AP EAPCET 2024 · 20 May · Shift 1 MCQ

A resistance of $20\ \Omega$ is connected to a source of an alternating potential $V = 200\sin(10\pi t)$. If t is the time taken by the current to change from the peak value to rms value, then 't' is (in seconds).

(A) 25×10^{-1}

(B) 2.5×10^{-4}

(C) 25×10^{-2}

(D) 2.5×10^{-2}

Answer: (D) 2.5×10^{-2} · The council's preliminary key

Q34 AP EAPCET 2024 · 20 May · Shift 2 MCQ

An inductor and a resistor are connected in series to an ac source of voltage $144 \sin\left(100\pi t + \frac{\pi}{2}\right)$ Volt. If the current in the circuit is $6 \sin\left(100\pi t + \frac{\pi}{6}\right)$ ampere, then the resistance of the resistor is

(A) $24\ \Omega$

(B) $36\ \Omega$

(C) $12\ \Omega$

(D) $18\ \Omega$

Answer: (C) $12\ \Omega$ · The council's preliminary key

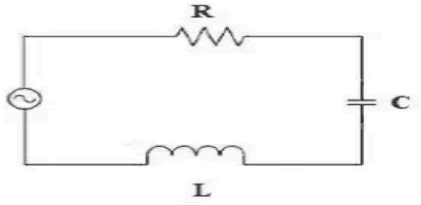
Q35 AP EAPCET 2024 · 19 May · Shift 2 MCQ

A series LCR circuit is shown in the figure. Where the inductance of 10 H, capacitance 40 μF and resistance 60 Ω are connected to a variable frequency 240 V source. The current at resonating frequency is

(see the figure above)

A series LCR circuit is shown in the figure. Where the inductance of 10 H, capacitance 40 μF and resistance 60 Ω are connected to a variable frequency 240 V source. The current at resonating frequency is

ఒక LCR శ్రేణి వలయం పటంలో చూపబడింది. దీనిలో 10 H ప్రేరకం, 40 μF క్రమశీలి మరియు 60 Ω నిరోధంలను ఒక 240 V చర పౌనఃపున్య జనకానికి కలపబడినవి. అయితే అనునాద పౌనఃపున్యం వద్ద విద్యుత్ ప్రవాహం



Options :

1. 4 A
2. 2 A
3. 5.4 A
4. 5.8 A

(A) 4 A
(B) 2 A
(C) 5.4 A
(D) 5.8 A

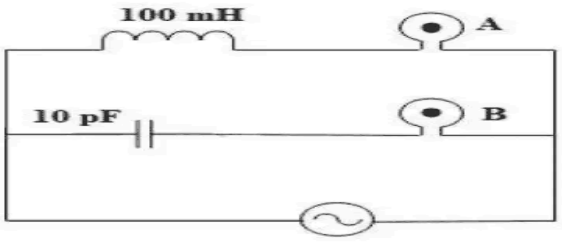
Answer: (A) 4 A · The council's preliminary key

Q36 AP EAPCET 2024 · 18 May · Shift 1 MCQ

In the figure, if A & B are identical bulbs, which bulb glows brighter

(see the figure above)

In the figure, if A & B are identical bulbs, which bulb glows brighter
ఇచ్చిన పటంలో, A మరియు B సర్వసమానమైన బల్బులు. వాటిలో ఏది ప్రకాశవంతముగా వెలుగుతుంది?



Options :
1. A
2. B
3. Both with equal brightness
రెండూ ఒకే విధంగా ప్రకాశిస్తాయి
4. Both do not glow
రెండూ వెలగవు

(A) A
(B) B
(C) Both with equal brightness
(D) Both do not glow

Answer: (A) A · The council's preliminary key

Q37 TS EAPCET 2024 · 11 May · Shift 1 MCQ

A capacitor and a resistor are connected in series to an ac source. If the ratio of the capacitive reactance of the capacitor and the resistance of the resistor is 4:3, then the power factor of the circuit is

(A) 0.3
(B) 0.8
(C) 0.6
(D) 0.5

Answer: (C) 0.6 · The council's preliminary key

Q38 TS EAPCET 2024 · 10 May · Shift 1 MCQ

A circular coil of area $200\ \mathrm{cm}^2$ and 50 turns is rotating about its vertical diameter with an angular speed of $40\ \mathrm{rad\,s}^{-1}$ in a uniform horizontal magnetic field of magnitude 2×10^{-2} T. The maximum emf induced in the coil is

(A) $1.2\ \mathrm{V}$
(B) $0.8\ \mathrm{V}$
(C) $0.6\ \mathrm{V}$
(D) $0.3\ \mathrm{V}$

Answer: (B) $0.8\ \mathrm{V}$ · The council's preliminary key

Q39 TS EAPCET 2024 · 10 May · Shift 1 MCQ

An inductor and a resistor are connected in series to an ac source of 10 V. If the potential difference across the inductor is 6 V, then the potential difference across the resistor is

(A) 4 V
(B) 10 V
(C) 6 V
(D) 8 V

Answer: (D) 8 V · The council's preliminary key

Q40 TS EAPCET 2024 · 10 May · Shift 2 MCQ

An inductor of inductive reactance R, a capacitor of capacitive reactance 2R and a resistor of resistance R are connected in series to an ac source. The power factor of the series LCR circuit is

(A) $\frac{1}{\sqrt{2}}$
(B) $\frac{1}{\sqrt{3}}$
(C) $\frac{1}{4}$
(D) $\frac{\sqrt{3}}{2}$

Answer: (A) $\frac{1}{\sqrt{2}}$ · The council's preliminary key

Q41 TS EAPCET 2024 · 9 May · Shift 1 MCQ

In a series LCR circuit, if the current leads the source voltage, then

(A) $X_C > X_L$
(B) $X_L > X_C$
(C) $X_L = X_C \neq 0$
(D) $X_L = X_C = 0$

Answer: (A) $X_C > X_L$ · The council's preliminary key

Q42 AP EAPCET 2023 · 19 May · Shift 1 MCQ

An ac voltage of $10 \sin \omega t$ volt is applied to a pure inductor of inductance 10 H. The current through the inductor in ampere is

(A) $\frac{1}{\omega} \sin\left(\omega t - \frac{\pi}{2}\right)$
(B) $\omega \sin\left(\omega t - \frac{\pi}{2}\right)$
(C) $\frac{1}{\omega^2} \sin\left(\omega t - \frac{\pi}{2}\right)$
(D) $\omega^2 \sin\left(\omega t - \frac{\pi}{2}\right)$

Answer: (A) $\frac{1}{\omega} \sin\left(\omega t - \frac{\pi}{2}\right)$ · The council's preliminary key

Q43 AP EAPCET 2023 · 18 May · Shift 1 MCQ

An inductor of inductance L, a capacitor of capacitance C and a resistor of resistance R are connected in series to an ac source. The quality factor of the circuit is

(A) $\sqrt{\frac{L}{CR^2}}$
(B) $\sqrt{\frac{LR^2}{C}}$
(C) $\sqrt{\frac{LC}{R^2}}$
(D) $\sqrt{\frac{L^2C}{R}}$

Answer: (A) $\sqrt{\frac{L}{CR^2}}$ · The council's preliminary key

Q44 AP EAPCET 2023 · 18 May · Shift 2 MCQ

A resistor of resistance $40\ \Omega$, a capacitor of capacitive reactance $20\ \Omega$ and an inductor of inductive reactance $50\ \Omega$ are connected in series to an ac source of 100 V. The current through the circuit is

(A) 0.5 A
(B) 1 A
(C) 1.5 A
(D) 2 A

Answer: (D) 2 A · The council's preliminary key

Q45 AP EAPCET 2023 · 17 May · Shift 1 MCQ

A resistor of $100\ \Omega$, an inductor of $\frac{25}{\pi^2}$ mH and a capacitor of $0.1\ \mu\text{F}$ are connected in series to an ac source. The impedance of the circuit is minimum for a frequency of

(A) 5 kHz
(B) 10 kHz
(C) 15 kHz
(D) 20 kHz

Answer: (B) 10 kHz · The council's preliminary key

Q46 AP EAPCET 2023 · 17 May · Shift 2 MCQ

An inductor and a resistor of $25\ \Omega$ are connected in series to an ac source of voltage $100\sin(100\,\pi t)$ volt. If the impedance of the circuit is $50\ \Omega$, the average power dissipated per cycle in the circuit is

(A) $10\ \text{W}$
(B) $25\ \text{W}$
(C) $50\ \text{W}$
(D) $100\ \text{W}$

Answer: (C) $50\ \text{W}$ · The council's preliminary key

Q47 AP EAPCET 2023 · 16 May · Shift 1 MCQ

An inductor is connected to an ac source of frequency 50 Hz. The frequency of the instantaneous power developed in the circuit is

(A) 25 Hz
(B) 50 Hz
(C) 100 Hz
(D) 200 Hz

Answer: (C) 100 Hz · The council's preliminary key

Q48 AP EAPCET 2023 · 16 May · Shift 2 MCQ

An ac generator converts

(A) electrical energy into mechanical energy.
(B) electrical energy into magnetic energy.
(C) mechanical energy into magnetic energy.
(D) mechanical energy into electrical energy.

Answer: (D) mechanical energy into electrical energy. · The council's preliminary key

Q49 AP EAPCET 2023 · 16 May · Shift 2 MCQ

A resistor of resistance R and an inductor of inductive reactance R are connected in series to an ac source. A capacitor of capacitive reactance 2 R is then connected in series with L and R. The ratio of the power factors of LR and LCR circuits is

(A) $1:1$
(B) $1:2$
(C) $1:3$
(D) $2:3$

Answer: (A) $1:1$ · The council's preliminary key

Q50 AP EAPCET 2023 · 15 May · Shift 1 MCQ

In an ac generator, if coil of N turns and area A is rotated at v revolutions per second in a uniform magnetic field B, then the motional emf produced is equal to

(At t = 0 s, the coil is perpendicular to the field)

(A) $\mathrm{NBA}\,(2\pi v)\sin(2\pi v t)$
(B) $\mathrm{NBA}^2\,(2\pi v)\sin(2\pi v t)$
(C) $\mathrm{N}^2\mathrm{B}^2\mathrm{A}^2\,(2\pi v)\sin(2\pi v t)$
(D) $\mathrm{NBA}\,(4\pi v)\sin(2\pi v t)$

Answer: (A) $\mathrm{NBA}\,(2\pi v)\sin(2\pi v t)$ · The council's preliminary key

Q51 AP EAPCET 2023 · 15 May · Shift 1 MCQ

The frequency of ac at which $16\ \mu\mathrm{F}$ capacitor and $\frac{10}{\pi^2}$ mH inductor will have same reactance is

(A) 1 kHz
(B) 1.25 kHz
(C) 1.5 kHz
(D) 2 kHz

Answer: (B) 1.25 kHz · The council's preliminary key

Q52 AP EAPCET 2023 · 15 May · Shift 2 MCQ

An inductor and a resistor are connected in series to an ac source. If the power factor of the circuit is 0.5, the ratio of the resistance of the resistor and the reactance of the inductor is

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(A) $1:1$
(B) $1:\sqrt{2}$
(C) $1:\sqrt{3}$
(D) $1:2$

Answer: (C) $1:\sqrt{3}$ · The council's preliminary key

Q53 TS EAMCET 2023 · 14 May · Shift 1 MCQ

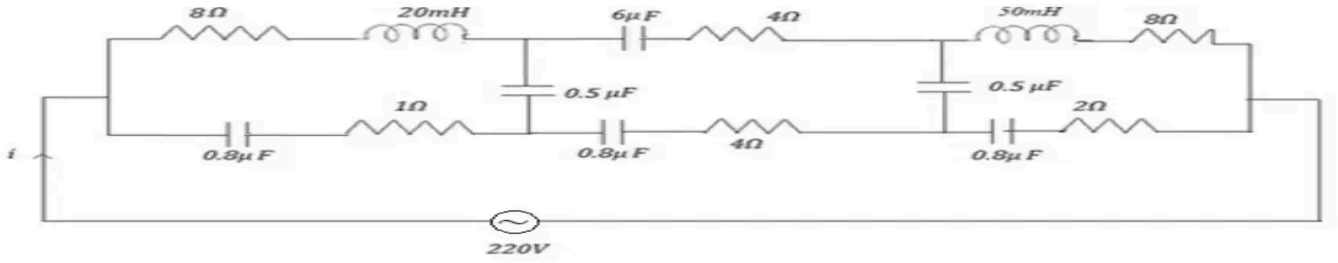
At very high frequencies, the current (i) in the given circuit is

(see the figure above)

Correct Marks : 1 Wrong Marks : 0

At very high frequencies, the current (i) in the given circuit is

అత్యధిక పౌనఃపున్యాల వద్ద క్రింది వలయంలో విద్యుత్ ప్రవాహం (i)



Options :

1. 4 A
2. 0.4 A
3. 44 A
4. 4.4 A

(A) 4 A
(B) 0.4 A
(C) 44 A
(D) 4.4 A

Answer: (C) 44 A · The council's preliminary key

Q54 TS EAMCET 2023 · 14 May · Shift 2 MCQ

A coil has a resistance of $30\ \Omega$ and an inductive reactance of $20\ \Omega$ at 50 Hz frequency. If an AC source of 200 V, 100 Hz is connected across the coil, the current in the coil is

(A) $2\ \mathrm{A}$
(B) $\frac{20}{\sqrt{13}}\ \mathrm{A}$
(C) $4\ \mathrm{A}$
(D) $8\ \mathrm{A}$

Answer: (C) $4\ \mathrm{A}$ · The council's preliminary key

Q55 TS EAMCET 2023 · 13 May · Shift 1 MCQ

A series LCR circuit is connected to an ac source of voltage $150\sin(80\pi t)$ volt. If the resistance of the resistor in the circuit is $25\ \Omega$ and the impedance in the circuit is $75\ \Omega$, the average power dissipated per cycle in the circuit is

(A) 75 W
(B) 200 W
(C) 50 W
(D) 100 W

Answer: (C) 50 W · The council's preliminary key

Q56 TS EAMCET 2023 · 13 May · Shift 2 MCQ

An alternating emf given by the equation $E = 200\sin(50\,\pi t)$ (where E is in volts and t is in seconds) is applied across a series combination of an inductor and a resistor having inductive reactance $40\ \Omega$ and resistance $30\ \Omega$ respectively. At time $t = 1\,s$, the power dissipated by the resistor is close to

$(\cos 53^\circ = 0.6)$

(A) 480 W
(B) 240 W
(C) 173 W
(D) 307 W

Options (2) or (4) were accepted. More than one answer was accepted. · The council's preliminary key

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Q57 TS EAMCET 2023 · 12 May · Shift 1 MCQ

The power factor of an AC circuit containing peak current 2 A and peak voltage 1V is 1/2, then the angle between voltage and current is

(A) 30°
(B) 45°
(C) 90°
(D) 60°

Answer: (D) 60° · The council's preliminary key

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Q58 TS EAMCET 2023 · 12 May · Shift 2 MCQ

In an ideal step up transformer, if the input voltage and input power are V_1 and P_1 respectively and the output voltage and output power are V_2 and P_2 respectively, then

(A) $V_1 = V_2$; $P_1 = P_2$
(B) $V_1 > V_2$; $P_1 > P_2$
(C) $V_1 < V_2$; $P_1 < P_2$
(D) $V_1 < V_2$; $P_1 = P_2$

Answer: (D) $V_1 < V_2$; $P_1 = P_2$ · The council's preliminary key

Q59 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

A capacitor of capacitance 100 μF and a coil of resistance 20 Ω and inductance 12.5 mH are connected in series with a 220 V, $\frac{200}{\pi}$ Hz AC source. The maximum value of instantaneous current in the circuit is

(A) 20 A
(B) 10 A
(C) 11 A
(D) 15 A

Answer: (C) 11 A · The council's preliminary key

Q60 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

A generator produces a current of 100 A at 4000V. The voltage is stepped up to 2×10^5 V by a transformer before being sent on a high voltage transmission line of resistance $50\ \Omega$. The percentage of power loss in the transmission line is

(A) 0.25 %
(B) 0.05 %
(C) 1.25 %
(D) 0.02 %

Answer: (B) 0.05 % · The council's preliminary key

Q61 TS EAMCET 2022 · 19 Jul · Shift 1 MCQ

A resistor of resistance of $100\ \Omega$ is connected to an AC source $\varepsilon = 10\sin(250\,\pi\,\mathrm{s}^{-1})t$. The energy dissipated as heat during t = 0 to t = 1 ms is approximately.

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(A) $\frac{0.57}{\pi}$ mJ

(B) $\frac{1.141}{\pi}$ mJ

(C) 1 mJ

(D) 0.5 mJ

Answer: (A) $\frac{0.57}{\pi}$ mJ · The council's preliminary key

Q62 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

The Q-value of a series LCR circuit with L = 2H, C = 32 μF and R = 20Ω is

(A) 12.5

(B) 25.0

(C) 50.0

(D) 125.0

Answer: (A) 12.5 · The council's preliminary key

Q63 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

An AC current is given by the expression, $I(t) = 50\sin(200\pi t)$ in amperes. The frequency and r.m.s value of the current respectively are

(A) $100\ \text{Hz},\ 50\sqrt{2}\ \text{A}$

(B) $100\ \text{Hz},\ 25\sqrt{2}\ \text{A}$

(C) $200\ \text{Hz},\ 50\sqrt{2}\ \text{A}$

(D) $200\ \text{Hz},\ 25\sqrt{2}\ \text{A}$

Answer: (B) $100\ \text{Hz},\ 25\sqrt{2}\ \text{A}$ · The council's preliminary key

Q64 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

A circular coil of area $0.01\ \text{m}^2$ and 40 turns is rotated about its vertical diameter with an angular speed of $50\ \text{rad}\,\text{s}^{-1}$ in a uniform horizontal magnetic field 0.05 T. If the average power loss due to joule heating is 25 mW, then the closed loop resistance of the coil is

(A) $50\ \Omega$

(B) $12.5\ \Omega$

(C) $75\ \Omega$

(D) $20\ \Omega$

Answer: (D) $20\ \Omega$ · The council's preliminary key

Q65 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Capacitive reactance of a capacitor in an AC circuit is $6\ \text{k}\Omega$. If the same capacitor is connected to an AC source of double the frequency, the capacitive reactance will become

(A) $6\ \text{k}\Omega$
(B) $3\ \text{k}\Omega$
(C) $1.5\ \text{k}\Omega$
(D) $8.5\ \text{k}\Omega$

Answer: (B) $3\ \text{k}\Omega$ · The council's preliminary key

Q66 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

An inductor of reactance $1\ \Omega$ and a resistor of resistance $3\ \Omega$ are connected in series to the terminals of 10 V (rms) ac source. The power dissipated in the circuit is

(A) $33.3\ \text{W}$
(B) $30\ \text{W}$
(C) $31.6\ \text{W}$
(D) $20\ \text{W}$

Answer: (B) $30\ \text{W}$ · The council's preliminary key

Q67 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

A $100\ \mu$F capacitor is connected to a 100 V, 50 Hz AC supply. The rms value of the current is

(A) 3.14 A
(B) 4.75 A
(C) 2.33 A
(D) 5.5 A

Answer: (A) 3.14 A · The council's preliminary key

Q68 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

A circuit containing inductance of $\frac{1}{6\pi}$ H and a resistance of $15\ \Omega$ in series. If an AC voltage of 100 V and 60 Hz is applied to above circuit, then the current in the circuit and phase difference between voltage and current respectively are

(A) 4 A and $\tan^{-1}\left(\frac{4}{5}\right)$
(B) 5.3 A and $\tan^{-1}\left(\frac{3}{4}\right)$
(C) 4 A and $\tan^{-1}\left(\frac{4}{3}\right)$
(D) 5.3 A and $\tan^{-1}\left(\frac{4}{3}\right)$

Answer: (C) 4 A and $\tan^{-1}\left(\frac{4}{3}\right)$ · The council's preliminary key

Q69 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The impedance of an LR circuit with $L = \frac{60}{\pi}$ mH, $R = 8\ \Omega$ and frequency 50 Hz is

(A) $1.3\ \Omega$
(B) $14.3\ \Omega$
(C) $20\ \Omega$
(D) $10\ \Omega$

Answer: (D) $10\ \Omega$ · The council's preliminary key

Q70 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Resonance frequency of LCR series AC circuit is f_o. Now inductance is reduced to $\frac{1}{4}$ times and capacitance is increased to 16 times, then the resonance frequency becomes

(A) $\frac{f_o}{4}$
(B) $\frac{f_o}{2}$
(C) $2f_o$
(D) $4f_o$

Answer: (B) $\frac{f_o}{2}$ · The council's preliminary key

Q71 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

$\frac{50}{\pi}\ \mu\text{F}$ capacitor is connected to a 250 V, 50 Hz AC supply. Then the rms current of the circuit is

(A) $1.25\ \text{A}$
(B) $4.9\ \text{A}$
(C) $5\ \text{A}$
(D) $6\ \text{A}$

Answer: (A) $1.25\ \text{A}$ · The council's preliminary key

Q72 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

An RLC circuit consists of a $150\ \Omega$ resistor, $20\ \mu\text{F}$ capacitor and a 500 mH inductor connected in series with a 100 V AC supply. The angular frequency of the supply voltage is $400\ \text{rad}\,\text{s}^{-1}$. The phase angle between current and the applied voltage is

(A) $\tan^{-1}(0.8)$
(B) $\tan^{-1}(0.25)$
(C) $\tan^{-1}(0.6)$
(D) $\tan^{-1}(0.5)$

Answer: (D) $\tan^{-1}(0.5)$ · The council's preliminary key

Q73 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

A 70 mH inductor is connected to 220 V, 50 Hz AC supply. The rms value of the current in the circuit is

(A) $\frac{100}{\sqrt{2}\pi}$ A
(B) 10 A
(C) $\frac{50}{\pi}$ A
(D) $\frac{10\sqrt{2}}{\pi}$ A

Answer: (B) 10 A · The council's preliminary key

Q74 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

A coil of inductance 0.1 H and resistance 110 Ω is connected to a source of 110 V and 350 Hz. The phase difference between the voltage maximum and the current maximum is

(A) $\tan^{-1}(1.5)$
(B) $\tan^{-1}(0.5)$
(C) $\tan^{-1}(1.73)$
(D) $\tan^{-1}(2)$

Answer: (D) $\tan^{-1}(2)$ · The council's preliminary key

Q75 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

Capacitive reactance of a capacitor in an AC circuit is $3\ \text{k}\Omega$. If this capacitor is connected to a new AC source of double frequency, the capacitive reactance will become

(A) $1.5\ \text{k}\Omega$
(B) $3\ \text{k}\Omega$
(C) $6\ \text{k}\Omega$
(D) $5.2\ \text{k}\Omega$

Answer: (A) $1.5\ \text{k}\Omega$ · The council's preliminary key

Q76 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

If 120 V, 60 Hz AC voltage is applied to an LR circuit having $R = 10\ \Omega$ and $L = 2\ H$, then current in the circuit is _____

(A) $0.32\ A$
(B) $0.16\ A$
(C) $0.48\ A$
(D) $0.80\ A$

Answer: (B) $0.16\ A$ · The council's preliminary key

Q77 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

The self-inductance of two coils of a transformer is $20\ \text{mH}$ and $30\ \text{mH}$. What is the resistance between them?

(A) 0
(B) $1.5\ \Omega$
(C) $600\ \Omega$
(D) Infinite

Answer: (D) Infinite · The council's preliminary key

Q78 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

A transformer works on the principle of _____

(A) Self-induction
(B) Electrical inertia
(C) Mutual induction
(D) Magnetic effect of electric current

Answer: (C) Mutual induction · The council's preliminary key

Q79 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

An ac source of angular frequency ω is fed across a resistor R and a capacitor C in series. The current flowing in the circuit found to be 'I'. now the frequency of the source is changed to $\frac{\omega}{3}$, (maintaining the same voltage) the current in the circuit is found to be halved. What is the ratio of reactance to resistance at the original frequency?

(A) $\sqrt{\frac{5}{7}}$
(B) $\sqrt{\frac{3}{4}}$
(C) $\sqrt{\frac{3}{5}}$
(D) $\sqrt{\frac{7}{5}}$

Answer: (C) $\sqrt{\frac{3}{5}}$ · The council's preliminary key

Q80 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

An LC resonant circuit contains a $400\,\mathrm{pF}$ capacitor and an inductor of $400\,\mu\mathrm{H}$. It is coupled to an antenna. Wavelength of radiated electromagnetic wave is _____

(A) $754\,\mathrm{m}$
(B) $377\,\mathrm{m}$
(C) $377\,\mathrm{cm}$
(D) $796\,\mathrm{m}$

Answer: (A) $754\,\mathrm{m}$ · The council's preliminary key

Q81 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

The current and emf through an inductance differ by phase by:

(A) $\frac{\pi}{4}$
(B) $\frac{\pi}{2}$
(C) $\frac{\pi}{3}$
(D) π

Answer: (B) $\frac{\pi}{2}$ · The council's preliminary key

Q82 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

The reactance of an inductor at $50\ Hz$ is $10\ \Omega$. The reactance of it at $200\ Hz$ is:

(A) $10\ \Omega$
(B) $40\ \Omega$
(C) $2.5\ \Omega$
(D) $20\ \Omega$

Answer: (B) $40\ \Omega$ · The council's preliminary key

Q83 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

In an AC circuit containing only capacitance, the current _____

(A) leads the voltage by 180°
(B) remains in phase with the voltage
(C) leads the voltage by 90°
(D) lags the voltage by 90°

Answer: (C) leads the voltage by 90° · The council's preliminary key

Q84 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

A $20\ V$ AC is applied to a circuit consisting of a resistor and a coil with negligible resistance. If the voltage across the resistor is $12\ V$, the voltage across the coil is _____.

(A) $16\ V$
(B) $10\ V$
(C) $8\ V$
(D) $6\ V$

Answer: (A) $16\ V$ · The council's preliminary key

Q85 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

An a.c generator consists of a coil of 100 turns and is of cross-sectional area $3\ m^2$. It is rotating at a constant angular speed of $60\ rad.sec^{-1}$ is a (sic) uniform magnetic field of $0.04\ T$. Resistance of the

coil is $360\ \Omega$. What is the maximum power dissipation in the coil?

(A) $720\ \mathrm{W}$
(B) $518\ \mathrm{W}$
(C) $360\ \mathrm{W}$
(D) $100\ \mathrm{W}$

Answer: (A) $720\ \mathrm{W}$ · The council's preliminary key

Q86 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

An electric generator is based on _____

(A) Faraday's laws of electromagnetic induction
(B) Motion of charged particles in an electromagnetic field
(C) Fission of Uranium by slow neutrons
(D) Newton's laws of motion

Answer: (A) Faraday's laws of electromagnetic induction · The council's preliminary key

Q87 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

A resonant frequency of a current is 'f'. If the capacitance is made four times the initial value, then the resonant frequency will become _____

(A) $\frac{f}{2}$
(B) $2f$
(C) f
(D) $\frac{f}{4}$

Answer: (A) $\frac{f}{2}$ · The council's preliminary key

Q88 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

A bulb of resistance $280\ \Omega$ is supplied with a $200\mathrm{V}$ AC supply. What is the peak current?

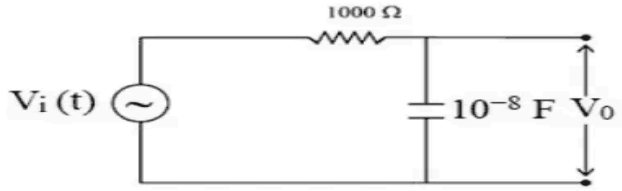
(A) Nearly $1\mathrm{A}$
(B) Nearly $2\mathrm{A}$
(C) Nearly $1.4\ \mathrm{A}$
(D) Nearly $2.8\ \mathrm{A}$

Answer: (A) Nearly $1\mathrm{A}$ · The council's preliminary key

Q89 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

In the following circuit an AC input $V_i(t) = (20\,\mathrm{mV})\sin(10^5 t)$ is applied at the left end. The amplitude of the output voltage V_0 at the right end across the capacitor will be:
(see the figure above)

In the following circuit an AC input $V_i(t) = (20\,mV)\sin(10^5\,t)$ is applied at the left end. The amplitude of the output voltage V_0 at the right end across the capacitor will be:



Options :

1. 14.14 mV
2. 10.55 mV
3. 20.2 mV
4. 25.55 mV

(A) 14.14 mV
(B) 10.55 mV
(C) 20.2 mV
(D) 25.55 mV

Answer: (A) 14.14 mV · The council's preliminary key

Q90 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

A resistor $R = 300\ \Omega$ and a capacitor $C = 25\ \mu f$ are connected in series with a $50\ V$, $\frac{50}{\pi}$ Hz AC source. The average power dissipated in the circuit is

(A) $0.5\ W$
(B) $1.0\ W$
(C) $2.0\ W$
(D) $1.5\ W$

Answer: (D) $1.5\ W$ · The council's preliminary key

Q91 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

How much current is drawn by the primary coil of a transformer, which steps down 220 V to 55 V to operate a device with an impedance of $275\ \Omega$?

(A) 0.05 A
(B) 0.02 A
(C) 0.2 A
(D) 0.15 A

Answer: (A) 0.05 A · The council's preliminary key

Q92 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

A resistor of 20 Ω and a capacitor are connected in series with an AC current source of 50 Hz. What should be the capacitance to produce a phase difference of 30° between the voltage and current?

(A) $\frac{1}{\sqrt{2}\pi}$ mF
(B) $\frac{\sqrt{3}}{2\pi}$ mF
(C) $\sqrt{3}$ mF
(D) $\frac{\sqrt{2}}{\pi}$ mF

Answer: (B) $\frac{\sqrt{3}}{2\pi}$ mF · The council's preliminary key

Q93 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

An alternating current is given by $i = 2\sin\omega t + 6\cos\omega t$. The rms current in amperes is

(A) $2\sqrt{5}$
(B) $2\sqrt{10}$
(C) $\sqrt{5}$
(D) $10\sqrt{2}$

Answer: (A) $2\sqrt{5}$ · The council's preliminary key

Q94 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

A resistance of $20\,\Omega$ is connected to an alternating current source of 110 V. If the frequency of the AC source is 50 Hz, then the time taken by the current to change from its maximum value to the rms value is

(A) $4\ \text{ms}$
(B) $2.5\ \text{s}$
(C) $2\ \text{s}$
(D) $2.5\ \text{ms}$

Answer: (D) $2.5\ \text{ms}$ · The council's preliminary key

Q95 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

In an AC generator, the ends of the coil are connected to _____

(A) two slip rings
(B) the split ring commutator
(C) the external circuit directly
(D) carbon brushes

Answer: (A) two slip rings · The council's preliminary key

Q96 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

Two electric circuits A and B are shown in the figure. The ratio of power factor of circuit B to that of circuit A is _____

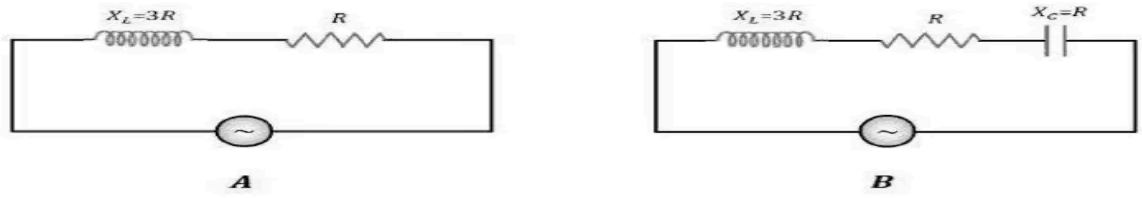
(see the figure above)

AP EAMCET 2020

AP EAMCET 2020

Two electric circuits A and B are shown in the figure. The ratio of power factor of circuit B to that of circuit A is _____

రెండు విద్యుత్ వలయాలు A మరియు B ఈ క్రింది పటంలో చూపబడినవి. వలయము B మరియు A ల సామర్థ్య కారకాల నిష్పత్తి _____



Options :
1. $\sqrt{3} : 2$
2. $\sqrt{2} : 1$
3. $2 : 3$
4. $4 : 3$

(A) $\sqrt{3} : 2$
(B) $\sqrt{2} : 1$
(C) $2 : 3$
(D) $4 : 3$

Answer: (B) $\sqrt{2} : 1$ · The council's preliminary key

Q97 AP EAMCET 2020 · 23 Sep · Shift 1 MCQ

In an A.C. circuit, the current flowing is $I = 5\sin\left(100t - \frac{\pi}{2}\right)$ A and the potential difference is $e = 200\sin(100t)$. The power consumption is equal to _____

(A) $1000\ \text{W}$
(B) $40\ \text{W}$
(C) $20\ \text{W}$
(D) $0\ \text{W}$

Answer: (D) $0\ \text{W}$ · The council's preliminary key

Q98 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

In a series LCR circuit _____

(A) The voltage leads the current if $X_L < X_C$
(B) The voltage leads the current if $X_L > X_C$
(C) The voltage and current are in phase
(D) The current leads the voltage if $X_L > X_C$

Answer: (B) The voltage leads the current if $X_L > X_C$ · The council's preliminary key

Q99 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

In an LCR circuit, the capacitance is changed from C to 4C. For the same resonant frequency, the inductance should be changed from L to _____

(A) $2L$
(B) $\frac{L}{2}$
(C) $\frac{L}{4}$
(D) $4L$

Answer: (C) $\frac{L}{4}$ · The council's preliminary key

Q100 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Find the current through the primary coil(P) of the transformer shown below?
(see the figure above)

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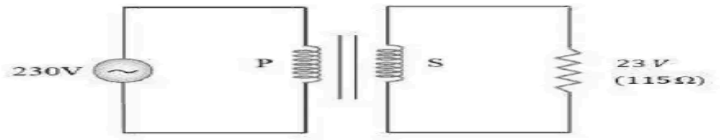
Orientation : Vertical

AP EAMCET 2020
AP EAMCET 2020

Find the current through the primary coil(P) of the transformer shown below?

పటములోని పరివర్తక ప్రాథమిక చుట్ట(P)లో విద్యుత్ ప్రవాహము _____



Options :

1. 0.08 A
2. 0.04 A
3. 0.02 A
4. 0.01 A

(A) 0.08 A
(B) 0.04 A
(C) 0.02 A
(D) 0.01 A

Answer: (C) 0.02 A · The council's preliminary key

Q101 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The coils of a step-down transformer have 500 and 5000 turns. In the primary coil an A.C current of $4\,A$ at $2200\,V$ is sent. The value of the current and potential difference in the secondary coil is

(A) $20\,A, 220\,V$
(B) $0.4\,A, 22000\,V$
(C) $40\,A, 220\,V$
(D) $40\,A, 22000\,V$

Answer: (C) $40\,A, 220\,V$ · The council's preliminary key

Q102 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

The primary of a transformer has 100 turns, and operates at $100\,V$-$200\,W$. The number of turns in the secondary, if the output voltage is $2000\,V$ is

(A) 2000
(B) 200
(C) 100
(D) 500

Answer: (A) 2000 · The council's preliminary key

Q103 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

A transformer works on the principle of _____

(A) self-induction
(B) electrical inertia
(C) magnetic effect of electric current
(D) mutual induction

Answer: (D) mutual induction · The council's preliminary key

Q104 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

When a pure resistor is connected to an AC source, the phase difference between the voltage and the current through the resistor is _____

(A) 90°
(B) 180°
(C) 45°
(D) 0°

Answer: (D) 0° · The council's preliminary key

Q105 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Why 220 V AC is more dangerous than 220 V DC ?

(A) The DC attracts
(B) Peak voltage for AC is much larger
(C) The body offers less resistance to AC
(D) Due to some other reason

Answer: (B) Peak voltage for AC is much larger · The council's preliminary key

Q106 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

In a series LCR circuit, the inductive reactance is twice the resistance and the capacitive reactance is $1/3^{rd}$ of the inductive reactance. The power factor of the circuit is _____

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(A) 1.5
(B) 1.15
(C) 0.6
(D) 0.5

Answer: (C) 0.6 · The council's preliminary key

Q107 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

When a rectangular coil is rotated in a uniform magnetic field about an axis passing through its centre and perpendicular to the field, the emf induced in the coil varies _____

(A) linearly
(B) exponentially
(C) sinusoidally
(D) laterally

Answer: (C) sinusoidally · The council's preliminary key

Q108 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

A LCR series circuit is connected to a source of alternating current. At resonance, the applied voltage and the current flowing through the circuit will have a phase difference of

(A) π
(B) $\frac{\pi}{2}$
(C) $\frac{\pi}{4}$
(D) 0

Answer: (D) 0 · Official TGCHE final key

Q109 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Which one of the following curves represents the variation of impedance (Z) with frequency f in a series LCR circuit when connected to an AC source?

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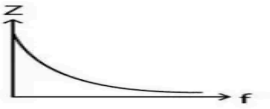
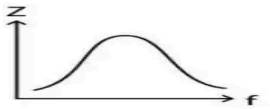
Question Number : 113 Question Id : 7196501393 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

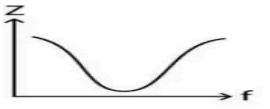
Which one of the following curves represents the variation of impedance (Z) with frequency f in a series LCR circuit when connected to an AC source?

AC జనకానికి LCR వలయాన్ని జతపరిచినప్పుడు, పౌనఃపున్యం 'f' వల్ల మార్పుచెందు అవరోధాన్ని (Z) ఈ క్రింది రేఖా పటాలలో ఏది సూచిస్తుంది.

Options :

1. 

2. 

3. 

4. 

(A) *see figure*
(B) *see figure*
(C) *see figure*
(D) *see figure*

Answer: (C) · Checked by our team

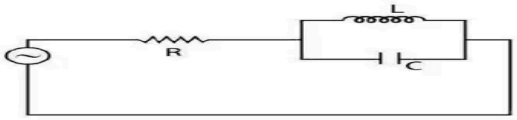
Q110 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

The LCR circuit shown below is driven by an ideal AC voltage source.
(see the figure above)
At frequency $f = \frac{1}{2\pi\sqrt{LC}}$, the correct statement is

Question Number : 113 Question Id : 7196509l3 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

The LCR circuit shown below is driven by an ideal AC voltage source.

క్రింది చూపబడిన LCR వలయం ఒక ఆదర్శ AC వోల్టేజ జనకం ద్వారా నడిపించబడుతుంది.



At frequency $f = \frac{1}{2\pi\sqrt{LC}}$, the correct statement is

పౌనఃపున్యం $f = \frac{1}{2\pi\sqrt{LC}}$ వద్ద సరైన ప్రకటన

Options :

1. The current through R is zero
R గుండా విద్యుత్ ప్రవాహం సున్నా

2. The current through R is infinite
R గుండా విద్యుత్ ప్రవాహం అనంతం

3. The current through R depends on the value of L and C
R గుండా విద్యుత్ ప్రవాహం L మరియు C విలువలపై ఆధారపడుతుంది

4. The current through R depends only on the value of R and not L and C
R గుండా విద్యుత్ ప్రవాహం కేవలం R మీద ఆధారపడుతుంది L మరియు C పై ఆధారపడదు.

(A) The current through R is zero
(B) The current through R is infinite
(C) The current through R depends on the value of L and C
(D) The current through R depends only on the value of R and not L and C

Answer: (A) The current through R is zero · Official TGCHE final key

Q111 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

For an R L C circuit driven with voltage of amplitude V_m and frequency $\omega_0 = \frac{1}{\sqrt{LC}}$ the current exhibits resonance. The quality factor Q is

(A) $\frac{\omega_0 R}{L}$
(B) $\frac{R}{\omega_0 C}$
(C) $\frac{CR}{\omega_0}$
(D) $\frac{\omega_0 L}{R}$

Answer: (D) $\frac{\omega_0 L}{R}$ · Official TGCHE final key

Q112 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

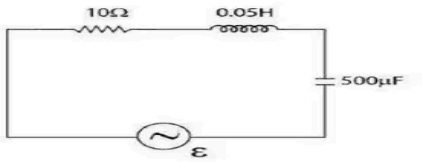
An alternating voltage ε = 30 sin 200 t (in volts) is applied to the circuit below. The amplitude of the current through the circuit is

(see the figure above)

Question Number : 113 Question Id : 719650593 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

An alternating voltage $\varepsilon = 30 \sin 200\ t$ (in volts) is applied to the circuit below. The amplitude of the current through the circuit is

$\varepsilon = 30 \sin 200\ t$ (వోల్టులలో) పరాంతర వోల్టేజ క్రింది వలయంలో ఉపయోగించబడింది. వలయంలోని విద్యుత్ ప్రవాహపరిమాణం



Options :

1. 3A
2. 2A
3. 1A
4. 0.5A

(A) 3A
(B) 2A
(C) 1A
(D) 0.5A

Answer: (A) 3A · Official TGCHE final key

Q113 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

A current of 6 A is flowing at 220 V in the primary coil of a transformer. If the voltage produced in the secondary coil is 1100 V and 60 % of power is lost, then the current in the secondary coil will be:

(A) $0.28\ \mathrm{A}$
(B) $0.36\ \mathrm{A}$
(C) $0.48\ \mathrm{A}$
(D) $0.42\ \mathrm{A}$

Answer: (C) $0.48\ \mathrm{A}$ · Official TGCHE final key

Q114 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Which of the following components of an L-C-R circuit, with an AC supply, dissipates energy?

(A) only L
(B) only R
(C) only C
(D) L and C

Answer: (B) only R · Official TGCHE final key

Q115 TS EAMCET 2019 · 6 May · Shift 1 MCQ

A coil is connected to an AC source with peak emf 8 V and frequency $\frac{30}{\pi}$ Hz. The coil has resistance of 8 Ω. If the average power dissipated by the coil is 0.4 W, then the inductance of the coil is :

(A) 0.8 H
(B) 2.0 H
(C) 1.4 H
(D) 0.4 H

Answer: (D) 0.4 H · Official TGCHE final key

Q116 TS EAMCET 2019 · 4 May · Shift 1 MCQ

A series LCR circuit with $L = 0.5\ \mathrm{H}$ and $R = 10\ \Omega$ is connected to an ac supply with rms voltage and frequency equal to 200 V and $\frac{150}{\pi}$ Hz respectively. The magnitude of capacitance is varied so that current amplitude in the circuit becomes maximum. The rms voltage difference across the inductor is

(A) $3000\ \mathrm{V}$
(B) $2500\ \mathrm{V}$
(C) $2000\ \mathrm{V}$
(D) $2600\ \mathrm{V}$

Answer: (A) $3000\ \mathrm{V}$ · Official TGCHE final key

Q117 TS EAMCET 2019 · 4 May · Shift 2 MCQ

In series L-C-R circuit, the resonance frequency of circuit increases two times that of the initial circuit by changing C to C′ and R from 100 Ω to 400 Ω, while the inductance was kept the same. The ratio C/C' is

(A) 2
(B) 8
(C) 16
(D) 4

Answer: (D) 4 · Official TGCHE final key

Q118 TS EAMCET 2019 · 3 May · Shift 1 MCQ

An inductor coil is connected to a capacitor and an AC source of r.m.s. voltage 8 V in series. The r.m.s. current in the circuit is 16 A and is in phase with e.m.f. If this inductor coil is connected to 6 V DC battery, the magnitude of steady current is

(A) 8 A
(B) 10 A
(C) 12 A
(D) 16 A

Answer: (C) 12 A · Official TGCHE final key

Q119 TS EAMCET 2019 · 3 May · Shift 2 MCQ

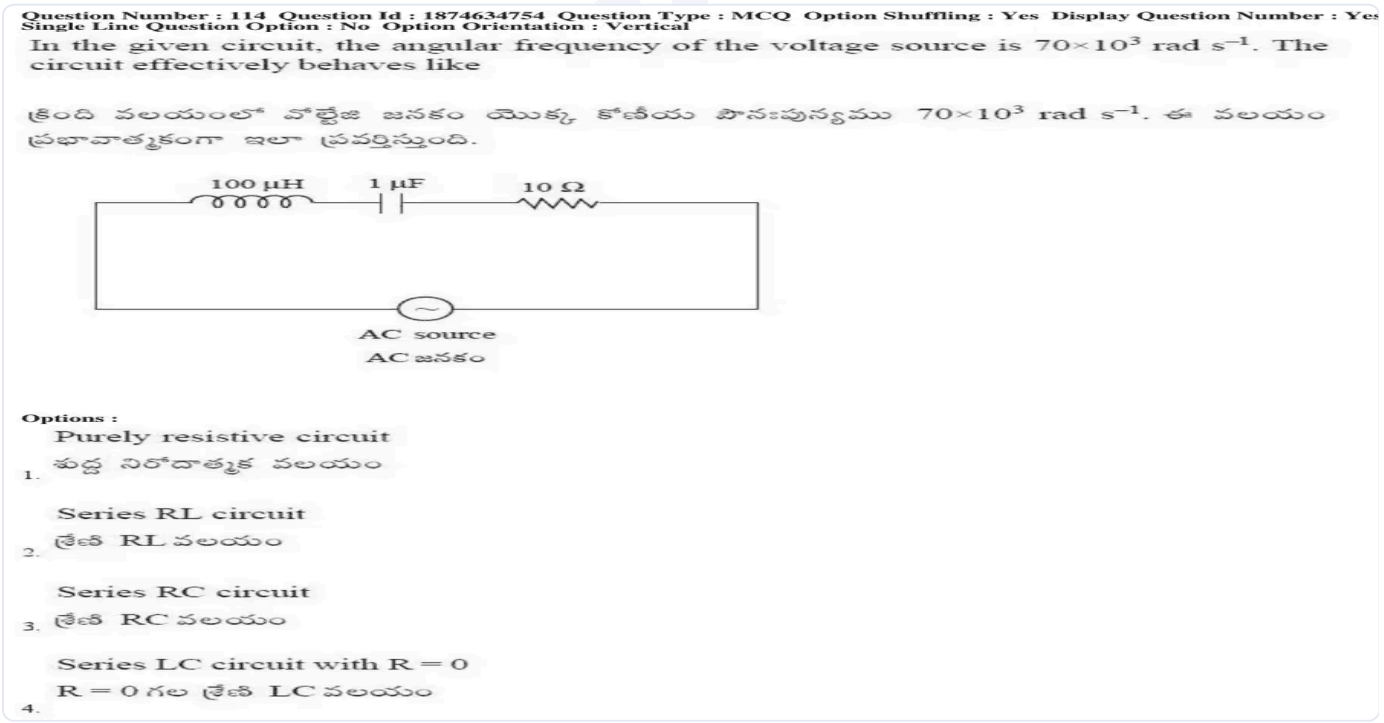
A sinusoidal voltage with a frequency of $50\ \mathrm{Hz}$ is applied to a series LCR circuit with a resistance of $5\ \Omega$, inductance of $20\ \mathrm{mH}$ and a capacitance of $500\ \mu\mathrm{F}$. The magnitude of impedance of the circuit is close to

(A) $19.2\ \Omega$
(B) $14.4\ \Omega$
(C) $9.6\ \Omega$
(D) $5\ \Omega$

Answer: (D) $5\ \Omega$ · Official TGCHE final key

Q120 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

In the given circuit, the angular frequency of the voltage source is $70 \times 10^3\ \mathrm{rad\,s^{-1}}$. The circuit effectively behaves like
(see the figure above)



(A) Purely resistive circuit
(B) Series RL circuit
(C) Series RC circuit
(D) Series LC circuit with $R = 0$

Answer: (C) Series RC circuit · Official APSCHE final key

Q121 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

When an inductor L and a resistor R in series are connected across a 12 V, 50 Hz supply, a current of 0.5 A flows in the circuit. The current differs in the phase from applied voltage by $\frac{\pi}{3}$ radian. Then the value of R is

(A) $10\ \Omega$
(B) $3\ \Omega$
(C) $12\ \Omega$
(D) $15\ \Omega$

Answer: (C) $12\ \Omega$ · Official APSCHE final key

Q122 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

A coil has an inductance $0.7\ \mathrm{H}$ and it is joined in series with a resistance of $220\ \Omega$. When ac of $220\ \mathrm{V}$, $50\ \mathrm{Hz}$ is applied to it, then wattless component in the circuit is

(A) $5\ \mathrm{A}$
(B) $0.5\ \mathrm{A}$
(C) $0.7\ \mathrm{A}$
(D) $7\ \mathrm{A}$

Answer: (B) $0.5\ \mathrm{A}$ · Official APSCHE final key

Q123 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

When an inductor of inductance $\frac{6}{\pi}$ H, a capacitor of capacitance $\frac{50}{\pi}$ μF and resistor of resistance R are connected in series with an ac supply of rms voltage 220 V and frequency 50 Hz, the rms current through the circuit is 440 mA. Match the inductive reactance (X_L), the capacitive reactance (X_C), the resistance (R) and the impedance (Z) of the circuit given in list-I with the corresponding values given in list-II.

List - I
A) X_L
B) X_C
C) R
D) Z

List - II
I) $200\ \Omega$

II) 300 Ω
III) 500 Ω
IV) 600 Ω
The correct answer is

(A) A-IV, B-II, C-I, D-III
(B) A-IV, B-III, C-I, D-II
(C) A-IV, B-I, C-II, D-III
(D) A-I, B-IV, C-III, D-II

Answer: (C) A-IV, B-I, C-II, D-III · Official APSCHE final key

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Q124 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

If the emf of an ac source is given by $6\sin\omega t + 4\sin 2\omega t$ volt then the r.m.s. value of the emf is

(A) $\sqrt{10}$ V
(B) $\sqrt{26}$ V
(C) $\sqrt{32}$ V
(D) $\sqrt{20}$ V

Answer: (B) $\sqrt{26}$ V · Official APSCHE final key

Q125 TS EAMCET 2018 · 7 May · Shift 1 MCQ

A distribution transformer with an efficiency of 90% supplies to a colony of 10 homes. All the 10 homes have electrical oven running at the same time, that draw 20 A current from 220 V lines. The power dissipated as heat in the transformer is

(A) 12.2 kW
(B) 4.9 kW
(C) 8.4 kW
(D) 9.9 kW

Answer: (B) 4.9 kW · The council's preliminary key

Q126 TS EAMCET 2018 · 5 May · Shift 1 MCQ

A coil has inductance of 0.4 H and resistance of 8 Ω. It is connected to an AC source with peak emf 4 V and frequency $\frac{30}{\pi}$ Hz. The average power dissipated in the circuit is:

(A) 1 W
(B) 0.5 W
(C) 0.3 W
(D) 0.1 W

Answer: (D) 0.1 W · The council's preliminary key

Q127 TS EAMCET 2018 · 4 May · Shift 2 MCQ

An oscillating circuit consisting of a capacitor with capacitance C = 10 μF, a coil with inductance L = 6.0 μH and active resistance R = 10 Ω. The mean power that should be fed to the circuit to maintain undamped harmonic oscillations with an external driving power with 50 Hz and a V_m of 280 V is

(A) 3.8 W
(B) 48 W
(C) 3 mW
(D) 48 mW

Answer: (A) 3.8 W · The council's preliminary key

Q128 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

A resistor and an inductor are connected in series to an ac source of voltage $150\sin(100\pi t+\pi)$ volt. If the current in the circuit is $5\sin\left(100\pi t+\frac{2\pi}{3}\right)$ ampere then the average power dissipated and the resistance of the resistor are respectively _____

(A) 187.5 W, $30\ \Omega$
(B) 187.5 W, $15\ \Omega$
(C) 375 W, $30\ \Omega$
(D) 375 W, $15\ \Omega$

Answer: (B) 187.5 W, $15\ \Omega$ · The council's preliminary key

Q129 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

The rms value of emf given by $E=(8\sin\omega t+6\cos\omega t)$ volt is

(A) $5\sqrt{2}$ V
(B) $7\sqrt{2}$ V
(C) 10 V
(D) $10\sqrt{2}$ V

Answer: (A) $5\sqrt{2}$ V · The council's preliminary key

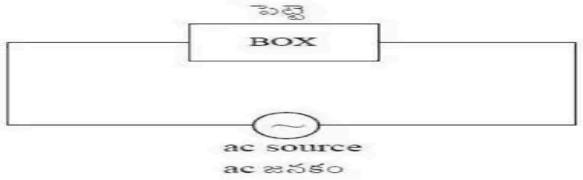
Q130 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

In the AC circuit shown, $E=E_0\sin(\omega t+\phi)$ and $i=i_0\sin\left(\omega t+\phi+\frac{\pi}{4}\right)$. Then the box contains *(see the figure above)*

Question Number : 114 Question Id : 4557344274 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the AC circuit shown, $E = E_0 \sin(\omega t + \phi)$ and $i = i_0 \sin\left(\omega t + \phi + \frac{\pi}{4}\right)$. Then the box contains

చూపిన AC వలయంలో $E = E_0 \sin(\omega t + \phi)$ మరియు $i = i_0 \sin\left(\omega t + \phi + \frac{\pi}{4}\right)$ అయితే పెట్టెలోనివి



Options :

1. Only C
C మాత్రమే
2. L and R in series
L మరియు R శ్రేణిలో
3. C and R in series or L, C and R in series
C మరియు R లు శ్రేణిలో లేదా L, C మరియు R లు శ్రేణిలో
4. Only R
R మాత్రమే

(A) Only C
(B) L and R in series
(C) C and R in series or L, C and R in series
(D) Only R

Answer: (C) C and R in series or L, C and R in series · The council's preliminary key

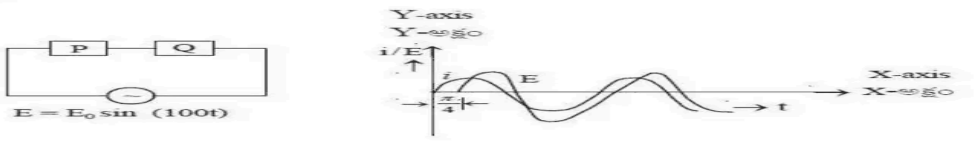
Q131 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

For the ac circuit shown below, phase difference between emf and current is $\frac{\pi}{4}$ radian as shown in the graph. If the impedance of the circuit is $1414\ \Omega$ then the values of P and Q are
(see the figure above)

Question Number : 114 Question Id : 4557343794 Question Type : MCQ Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the ac circuit shown below, phase difference between emf and current is $\frac{\pi}{4}$ radian as shown in the graph. If the impedance of the circuit is $1414\ \Omega$ then the values of P and Q are

క్రింద చూపిన ac వలయంనకు, విచాబ నకు మరియు విద్యుత్తు ప్రవాహమునకు మధ్య దశాభేదము $\frac{\pi}{4}$ రేడియన్లు గ్రాఫులో చూపినట్లు ఉంది. ఈ వలయం యొక్క అవరోధం $1414\ \Omega$ అయిన P మరియు Q విలువలు



Options :
1. $1\ k\Omega$, $10\ \mu F$
2. $1\ k\Omega$, $1\ \mu F$
3. $1\ k\Omega$, $10\ mH$
4. $1\ k\Omega$, $1\ mH$

(A) $1\ \mathrm{k\Omega}$, $10\ \mu\mathrm{F}$
(B) $1\ \mathrm{k\Omega}$, $1\ \mu\mathrm{F}$
(C) $1\ \mathrm{k\Omega}$, $10\ \mathrm{mH}$
(D) $1\ \mathrm{k\Omega}$, $1\ \mathrm{mH}$

Answer: (A) $1\ \mathrm{k\Omega}$, $10\ \mu\mathrm{F}$ · The council's preliminary key

Q132 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

An inductor and a resistor are connected in series to an ac source. The current in the circuit is 500 mA if the applied ac voltage is $8\sqrt{2}\ \mathrm{V}$ at a frequency of $\frac{175}{\pi}$ Hz and the current in the circuit is 400 mA if the same ac voltage at a frequency of $\frac{225}{\pi}$ Hz is applied. The values of the inductance and the resistance are respectively

(A) $60\ \mathrm{mH},\ 71\ \Omega$
(B) $\sqrt{60}\ \mathrm{mH},\ 71\ \Omega$
(C) $\sqrt{60}\ \mathrm{mH},\ \sqrt{71}\ \Omega$
(D) $60\ \mathrm{mH},\ \sqrt{71}\ \Omega$

Answer: (D) $60\ \mathrm{mH},\ \sqrt{71}\ \Omega$ · The council's preliminary key

Q133 TS EAMCET 2017 · 12 May · Offline MCQ

An AC generator producing 10 V (rms) at 200 rad/s is connected in series with a $50\ \Omega$ resistor, a 400 mH inductor and a $200\ \mu\mathrm{F}$ capacitor. The rms voltage across the inductor is

(A) 2.5 V
(B) 3.4 V
(C) 6.7 V
(D) 10.8 V

Answer: (D) 10.8 V · The council's preliminary key

Q134 TS EAMCET 2017 · 12 May · Offline MCQ

A generator with a circular coil of 100 turns of area $2 \times 10^{-2}\ \mathrm{m}^2$ is immersed in a $0.01\ \mathrm{T}$ magnetic field and rotated at a frequency of $50\ \mathrm{Hz}$. The maximum emf which is produced during a cycle is

(A) $6.28\ \mathrm{V}$
(B) $3.44\ \mathrm{V}$
(C) $10\ \mathrm{V}$
(D) $1.32\ \mathrm{V}$

Answer: (A) $6.28\ \mathrm{V}$ · The council's preliminary key

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Q135 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

When a coil is connected to AC supply of frequency 50 Hz, a current of 4 A flows in it and it consumes 240 W power. If the potential difference across the coil is 100 V, then the inductance value of the coil is

(A) $L = \frac{1}{5\pi}\ \mathrm{H}$
(B) $L = \frac{\pi}{5}\ \mathrm{H}$
(C) $L = (5\pi)\ \mathrm{H}$
(D) $L = \frac{1}{25\pi}\ \mathrm{H}$

Answer: (A) $L = \frac{1}{5\pi}\ \mathrm{H}$ · The council's preliminary key

Q136 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

A current of 4 A flows in a coil when connected to a 12 V d.c. source. If the same coil is connected to a 12 V, $\left(\frac{25}{\pi}\right)$ Hz a.c source, a current of 2.4 A flows in the circuit. The inductance of the coil is _____ .

(A) $100\ \mathrm{mH}$
(B) $80\ \mathrm{mH}$
(C) $60\ \mathrm{mH}$
(D) $50\ \mathrm{mH}$

Answer: (B) $80\ \mathrm{mH}$ · The council's preliminary key

Q137 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

An inductance of 0.2 H and resistance of 100 Ω are connected in series to an ac of 180 V, 50 Hz supply. The rms current flowing in the circuit will be _____ (Take π^2 as 10)

(A) $5.52\ \mathrm{A}$
(B) $3.15\ \mathrm{A}$
(C) $1.522\ \mathrm{A}$
(D) $7.35\ \mathrm{A}$

Answer: (C) $1.522\ \mathrm{A}$ · The council's preliminary key

Q138 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

An LCR series circuit is connected to an external emf, $e = 200 \sin 100\pi t$ v. The values of capacitance and resistance in the circuit are $1\ \mu\mathrm{F}$ and $100\ \Omega$ respectively. The amplitude of current in the circuit is maximum when the inductance is (in henry)

(A) $\frac{100}{\pi^2}$
(B) 100
(C) 100π
(D) 10^4

Answer: (A) $\frac{100}{\pi^2}$ · The council's preliminary key

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Q139 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

An emf $E = 6\cos 6000t$ volt is applied to an L-R circuit of inductance 4 mH and resistance 7 Ω. The amplitude of the current in the circuit is _____

(A) 0.24 A
(B) 0.14 A
(C) 0.54 A
(D) 0.84 A

Answer: (A) 0.24 A · The council's preliminary key

Q140 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

An inductor and a resistor are connected in series to an ac source of variable frequency. When the frequency of the applied ac is 50 Hz, the power factor of the circuit is $\frac{\sqrt{3}}{2}$. If the frequency of the ac is increased by 200%, the power factor of the circuit is _____.

(A) 0.8
(B) 0.9
(C) 0.7
(D) 0.5

Answer: (D) 0.5 · The council's preliminary key

Q141 TS EAMCET 2016 · 15 May · Offline MCQ

A capacitance of $\left(\frac{10^{-3}}{2\pi}\right)$ F and an inductance of $\left[\frac{100}{\pi}\right]$ mH and a resistance of 10 Ω are connected in series with an AC voltage source of 220 V, 50 Hz. The phase angle of the circuit is

(A) 60°
(B) 30°
(C) 45°
(D) 90°

Answer: (C) 45° · Official TGCHE final key

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Q142 AP EAMCET 2014 · 22 May · Offline MCQ

A capacitor 50 μF is connected to a power source $V = 220 \sin 50\, t$ (V in volt, t in second). The value of rms current (in Amperes)

(A) $\frac{\sqrt{2}}{0.55}$ A
(B) 0.55 A
(C) $\sqrt{2}$
(D) $\frac{(0.55)}{\sqrt{2}}$ A

Answer: (D) $\frac{(0.55)}{\sqrt{2}}$ A · The council's preliminary key

Q143 AP EAMCET 2013 · 10 May · Offline MCQ

A series LCR circuit is connected across a source of alternating emf of changing frequency and resonates at frequency f_0. Keeping capacitance constant, if the inductance (L) is increased by $\sqrt{3}$ times and resistance is increased (R) by 1.4 times, the resonant frequency now is

(A) $3^{1/4} f_0$
(B) $\sqrt{3}\, f_0$
(C) $(\sqrt{3}-1)^{1/4} f_0$
(D) $\left(\frac{1}{3}\right)^{1/4} f_0$

Answer: (D) $\left(\frac{1}{3}\right)^{1/4} f_0$ · The council's preliminary key

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