

JEE MAIN ALTERNATING CURRENT — RESONANCE AND QUALITY FACTOR — PYQS

Max. Marks: 16

Questions: 4

Section A (MCQ) — 1 question

- Q.1** A series LCR circuit is connected to an alternating source of emf E . The current amplitude at resonant frequency is I_0 . If the value of resistance R becomes twice of its initial value then amplitude of current at resonance will be

[JEE Main 2025 (Online) 22nd January Evening Shift]

- (1) $\frac{I_0}{2}$ (2) $\frac{I_0}{\sqrt{2}}$ (3) $2I_0$ (4) I_0

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full solution



Section B (Numerical) — 3 questions

- Q.2** A series LCR circuit with $R = 20 \, \Omega$, $L = 1.6 \, \text{H}$ and $C = 40 \, \mu\text{F}$ is connected to a variable frequency a.c. source. The inductive reactance at resonant frequency is _____ Ω .

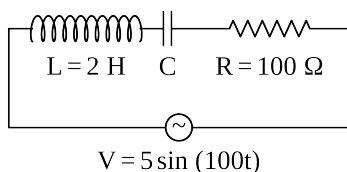
[JEE Main 2026 (Online) 5th April Evening Shift]

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- Q.3** Using a variable frequency a.c. voltage source the maximum current measured in the given LCR circuit is $50 \, \text{mA}$ for $V = 5\sin(100t)$. The values of L and R are shown in the figure. The capacitance of the capacitor (C) used is _____ μF .

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- Q.4** In a series LCR circuit, a resistor of $300 \, \Omega$, a capacitor of $25 \, \text{nF}$ and an inductor of $100 \, \text{mH}$ are used. For maximum current in the circuit, the angular frequency of the ac source is _____ $\times 10^4 \, \text{radians s}^{-1}$

[JEE Main 2025 (Online) 23rd January Evening Shift]

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ANSWER KEY

Section A (MCQ) — 1 question

Ques.	1									
Ans.	1									

Section B (Numerical) — 3 questions

Ques.	2	3	4				
Ans.	200	50	2				