

PYQSide

NEET ALTERNATING CURRENT — RESONANCE AND QUALITY FACTOR — PYQS

Max. Marks: 32

Questions: 8

Section A (MCQ)

Q.1 An ac circuit contains a resistance of $1\text{ k}\Omega$, a capacitor of $0.1\text{ }\mu\text{F}$ and an inductor of 1 mH connected in series. The resonance frequency of the circuit is approximately : [NEET (UG) 2026]

- (1) 15.9 kHz (2) 20.7 kHz
(3) 10.1 kHz (4) 13.5 kHz

Scan or tap for the full solution



Q.2 In a series LCR circuit, the inductance L is 10 mH , capacitance C is $1\text{ }\mu\text{F}$ and resistance R is $100\text{ }\Omega$. The frequency at which resonance occurs is :- [NEET (UG) 2023]

- (1) 15.9 kHz (2) 1.59 rad/s
(3) 1.59 kHz (4) 15.9 rad/s

Scan or tap for the full solution



Q.3 A series LCR circuit with inductance 10 H , capacitance $10\text{ }\mu\text{F}$, resistance $50\text{ }\Omega$ is connected to an ac source of voltage, $V = 200\sin(100t)$ volt. If the resonant frequency of the LCR circuit is ν_0 and the frequency of the ac source is ν , then [NEET (UG) 2022]

- (1) $\nu_0 = \nu = 50\text{ Hz}$
(2) $\nu_0 = \nu = \frac{50}{\pi}\text{ Hz}$
(3) $\nu_0 = \frac{50}{\pi}\text{ Hz}$, $\nu = 50\text{ Hz}$
(4) $\nu = 100\text{ Hz}$, $\nu_0 = \frac{100}{\pi}\text{ Hz}$

Scan or tap for the full solution



Q.4 A series LCR circuit containing 5.0 H inductor, $80\text{ }\mu\text{F}$ capacitor and $40\text{ }\Omega$ resistor is connected to 230 V variable frequency ac source. The angular frequencies of the source at which power transferred to the circuit is half the power at the resonant angular frequency are likely to be : [NEET (UG) 2021]

- (1) 42 rad/s and 58 rad/s (2) 25 rad/s and 75 rad/s
(3) 50 rad/s and 25 rad/s (4) 46 rad/s and 54 rad/s

Scan or tap for the full solution



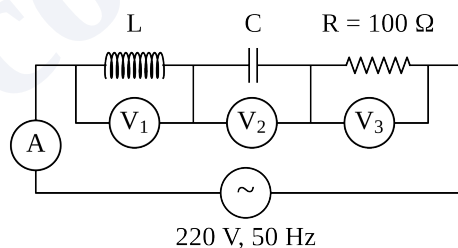
Q.5 Which of the following combinations should be selected for better tuning of an L-C-R circuit used for communication? [NEET 2016 (Phase 2)]

- (1) $R = 20\text{ }\Omega$, $L = 1.5\text{ H}$, $C = 35\text{ }\mu\text{F}$
(2) $R = 25\text{ }\Omega$, $L = 2.5\text{ H}$, $C = 45\text{ }\mu\text{F}$
(3) $R = 15\text{ }\Omega$, $L = 3.5\text{ H}$, $C = 30\text{ }\mu\text{F}$
(4) $R = 25\text{ }\Omega$, $L = 1.5\text{ H}$, $C = 45\text{ }\mu\text{F}$

Scan or tap for the full solution



Q.6 In the given circuit the readings of voltmeters V_1 and V_2 are 300 volts each. The readings of the voltmeter V_3 and ammeter A are respectively [AIPMT 2010 (Prelims)]



- (1) 150 V , 2.2 A (2) 220 V , 2.2 A
(3) 220 V , 2.0 A (4) 100 V , 2.0 A

Scan or tap for the full solution



Q.7 What is the value of inductance L for which the current is maximum in a series LCR circuit with $C = 10\text{ }\mu\text{F}$ and $\omega = 1000\text{ s}^{-1}$? [AIPMT 2007]

- (1) 1 mH
(2) cannot be calculated unless R is known
(3) 10 mH
(4) 100 mH

Scan or tap for the full solution



Q.8 The value of quality factor is [AIPMT 2001]

- (1) $\frac{\omega L}{R}$ (2) $\frac{1}{\omega RC}$ (3) $\sqrt{LC}$ (4) L/R

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7
Ans.	1	3	2	4	3	2	4
Ques.	8						
Ans.	1, 2						