

NEET ALTERNATING CURRENT — SERIES LCR CIRCUIT, IMPEDANCE AND PHASE — PYQS

Max. Marks: 32

Questions: 8

Section A (MCQ) — 8 questions

- Q.1** An ac voltage $V = 220\sin(2 \times 10^3 t)$ Volt is applied to a series LCR circuit. Then the current amplitude in this circuit is:

(Given : $L = 10 \text{ mH}$, $C = 25 \text{ } \mu\text{F}$, $R = 100 \text{ } \Omega$)

[RE-NEET (UG) 2026]

- (1) 22.0 A (2) 2.2 A (3) 5.5 A (4) 11.0 A

Scan or tap for the full solution



- Q.2** To an ac power supply of 220 V at 50 Hz, a resistor of $20 \text{ } \Omega$, a capacitor of reactance $25 \text{ } \Omega$ and an inductor of reactance $45 \text{ } \Omega$ are connected in series. The corresponding current in the circuit and the phase angle between the current and the voltage is, respectively

[NEET (UG) 2025]

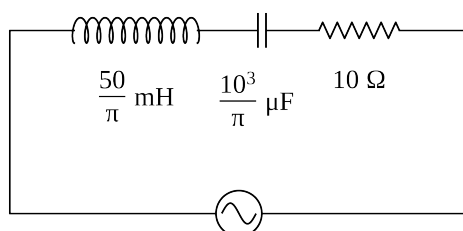
- (1) 15.6 A and
- 30°
- (2) 15.6 A and
- 45°
-
- (3) 7.8 A and
- 30°
- (4) 7.8 A and
- 45°

Scan or tap for the full solution



- Q.3** The net impedance of circuit (as shown in figure) will be :

[NEET (UG) 2023]



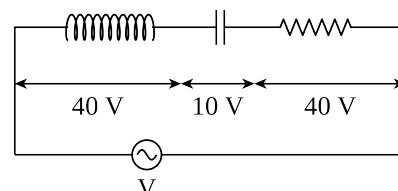
220 V, 50 Hz

- (1)
- $15 \text{ } \Omega$
- (2)
- $5\sqrt{5} \text{ } \Omega$
-
- (3)
- $25 \text{ } \Omega$
- (4)
- $10\sqrt{2} \text{ } \Omega$

Scan or tap for the full solution



- Q.4** An inductor of inductance L , a capacitor of capacitance C and a resistor of resistance ' R ' are connected in series to an ac source of potential difference ' V ' volts as shown in figure. Potential difference across L , C and R is 40 V, 10 V and 40 V, respectively. The amplitude of current flowing through LCR series circuit is $10\sqrt{2} \text{ A}$. The impedance of the circuit is : [NEET (UG) 2021]



- (1)
- $5 \text{ } \Omega$
- (2)
- $4\sqrt{2} \text{ } \Omega$
-
- (3)
- $5/\sqrt{2} \text{ } \Omega$
- (4)
- $4 \text{ } \Omega$

Scan or tap for the full solution



- Q.5** A series R-C circuit is connected to an alternating voltage source. Consider two situations :

- (a) When capacitor is air filled.
-
- (b) When capacitor is mica filled.

Current through resistor is i and voltage across capacitor is V then

[AIPMT 2015]

- (1)
- $i_a > i_b$
- (2)
- $V_a = V_b$
- (3)
- $V_a < V_b$
- (4)
- $V_a > V_b$

Scan or tap for the full solution



- Q.6** A coil has resistance 30 ohm and inductive reactance 20 ohm at 50 Hz frequency. If an ac source, of 200 volt, 100 Hz, is connected across the coil, the current in the coil will be

[AIPMT 2011 (Mains)]

- (1) 2.0 A (2) 4.0 A (3) 8.0 A (4)
- $\frac{20}{\sqrt{13}} \text{ A}$

Scan or tap for the full solution



- Q.7** An ac voltage is applied to a resistance R and an inductor L in series. If R and the inductive reactance are both equal to $3 \text{ } \Omega$, the phase difference between the applied voltage and the current in the circuit is

[AIPMT 2011 (Prelims)]

- (1)
- $\pi/6$
- (2)
- $\pi/4$
- (3)
- $\pi/2$
- (4) zero

Scan or tap for the full solution



- Q.8** In a circuit L , C and R are connected in series with an alternating voltage source of frequency f . The current leads the voltage by 45° . The value of C is

[AIPMT 2005]

(1) $\frac{1}{\pi f(2\pi fL - R)}$

(2) $\frac{1}{2\pi f(2\pi fL - R)}$

(3) $\frac{1}{\pi f(2\pi fL + R)}$

(4) $\frac{1}{2\pi f(2\pi fL + R)}$

Scan or tap for the
full solution



ANSWER KEY

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