SHAHEEN GROUP OF INSTITUTIONS
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Class : NEET Repeaters   Sub: Physics   Worksheet–20   Date: 11-02-2019

Alternating Current-2

1. An inductance of 1 mH, a condenser of 10 μF and a resistance of 50Ω are connected in series. The reactance of inductor and condensers are same. The reactance of either of them will be
(A) 100Ω (B) 30Ω (C) 3.2Ω (D) 10Ω

2. L, C and R represent physical quantities inductance, capacitance and resistance respectively. The combination representing dimension of frequency is
(A) LC (B) $(LC)^{-1/2}$ (C) $\left(\frac{L}{C}\right)^{-1/2}$ (D) $\frac{C}{L}$

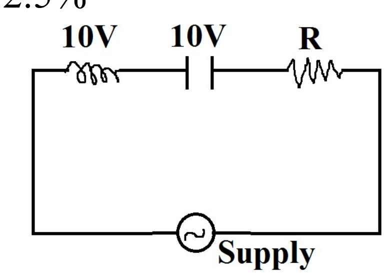
3. A circuit contains R, L and C connected in series with an A.C. source. The values of the reactances for inductor and capacitor are 200Ω and 600Ω respectively and the impedance of the circuit is Z_1. What happens to the impedance of the same circuit if the values of the reactances are interchanged
(A) The impedance will remain unchanged. (B) The impedance will increase.
(C) The impedance will decrease. (D) Information insufficient.

4. At resonance in a series LCR circuit, which of the following statements is true
(A) Current in the circuit is maximum and phase difference between E and I is π/2.
(B) Current in the circuit is maximum and phase difference between E and I is zero.
(C) Voltage is maximum and phase difference between E and I is π/2.
(D) Current is minimum and phase difference between E and I is zero.

5. A series R-L-C (R=10Ω, X_L = 20Ω, Xc = 20Ω) circuit is supplied by V=10sinωt then power dissipation in circuit is
(A) Zero (B) 10 watt (C) 5 watt (D) 2.5 watt

6. In a series resonant R-L-C circuit, if L is increase by 25% and C is decreased by 20%, then the resonant frequency will
(A) Increase by 10% (B) Decrease by 10%
(C) Remain unchanged (D) Increases by 2.5%

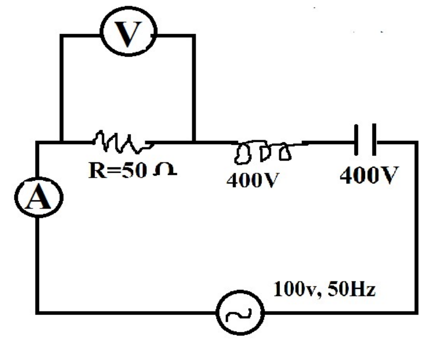
7. If value of R is changed, then
(A) Voltage across L remains same.
(B) Voltage across C remains same.
(C) Voltage across LC combination remains same.
(D) Voltage across LC combination changes.



8. In a series LCR circuit voltage across resister inductor and capacitor are 1V, 3V and 2V respectively. At the instant t when the source voltage is given by $V = V_o \cos \omega t$, the current in the circuit will be

(A) $I = I_o \cos\left(\omega t + \frac{\pi}{4}\right)$ (B) $I = I_o \cos\left(\omega t - \frac{\pi}{4}\right)$ (C) $I = I_o \cos\left(\omega t + \frac{\pi}{3}\right)$ (D) $I = I_o \cos\left(\omega t - \frac{\pi}{3}\right)$

9. In given LCR circuit, the voltage across the terminals of a resistance and current will be



(A) 400V, 2A

(B) 800V, 2A

(C) 100V, 2A

(D) 100V, 4A

10. A 60 μF capacitor is charged to 100 volts. This charged capacitor is connected across a 1.5 mH coil, so that LC oscillations occur. The maximum current in the coil is

(A) 1.5 A (B) 2A (C) 15A (D) 20A

11. A coil of inductive reactance 31Ω has a resistance of 8Ω. It is placed in series with a condenser of capacitive reactance 25Ω. The combination is connected to an a.c. source of 110 volt. The power factor of the circuit is

(A) 0.56 (B) 0.64 (C) 0.80 (D) 0.33

12. A condenser of capacity C is charged to a potential difference of V_1. The plates of the condenser are then connected to an ideal inductor of inductance L. The current through the inductor when the potential difference across the condenser reduces to V_2 is?

(A) $\frac{C(V_1^2 - V_2^2)}{L}$ (B) $\frac{C(V_1^2 + V_2^2)}{L}$ (C) $\left(\frac{C(V_1^2 - V_2^2)}{L}\right)^{1/2}$ (D) $\left(\frac{C(V_1 + V_2)}{L}\right)^{1/2}$

13. In an electrical circuit R, L, C and an a.c. voltage source are all connected in series. When L is removed from the circuit, the phase difference between the voltage and the current in the circuit is π/3. If instead, C is removed from the circuit the phase difference is again π/3. The power factor of the circuit is

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

14. Primary winding and secondary winding of a transformer has 100 and 300 turns respectively. If its input power is 60 W then output power of the transformer will be

(A) 240 W (B) 180 W (C) 60 W (D) 20 W

15. A step up transformer has turn ratio 10:1. A cell of e.m.f. 2 volts is fed to the primary. The secondary voltage developed is

(A) 20 V (B) 10 V (C) 2V (D) Zero

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1-D	2-B	3-A	4-B	5-C	6-C	7-C	8-B	9-C	10-D	11-C	12-C	13-A	14-C	15-D