

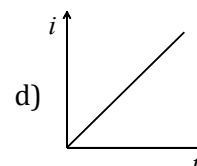
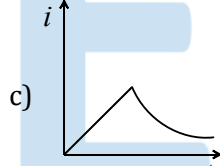
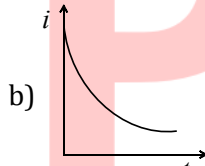
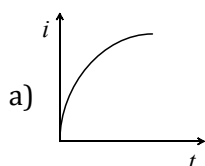
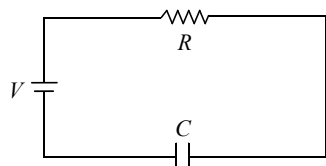
Class : XIIth
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Subject : PHYSICS
DPP No. :8

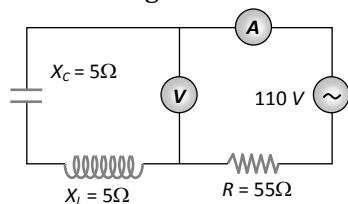
Topic :-Alternating Current

1. The resistance of a coil for dc is in ohms. In ac, the resistance
- a) Will remain same b) Will increase c) Will decrease d) Will be zero

2. The current i in the circuit shown here varies with time t is



3. A circuit has a resistance of 11Ω , an inductive reactance of 25Ω and a capacitive resistance of 18Ω . It is connected to an ac source of $260V$ and $50Hz$. The current through the circuit (in amperes) is
- a) 11 b) 15 c) 18 d) 20
4. The reading of ammeter in the circuit shown will be



- a) 2A b) 2.4 A c) Zero d) 1.7 A
5. A step-up transformer is used on a $120 V$ line to provide a potential difference of $2400 V$. If the primary coil has 75 turns, the number of turns in the secondary coil is
- a) 150 b) 1200 c) 1500 d) 1575
6. A coil of inductance 300 mH and resistance 2Ω is connected to a source of voltage $2V$. The current reaches half of its steady state value in
- a) 0.05 s b) 0.1 s c) 0.15 s d) 0.3 s

7. An alternating *e.m.f.* of angular frequency ω is applied across an inductance. The instantaneous power developed in the circuit has an angular frequency

- a) $\omega/4$ b) $\omega/2$ c) ω d) 2ω

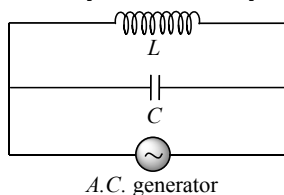
8. A $10\ \text{ohm}$ resistance, $5\ \text{mH}$ coil and $10\ \mu\text{F}$ capacitor are joined in series. When a suitable frequency alternating current source is joined to this combination, the circuit resonates. If the resistance is halved, the resonance frequency

- a) Is halved b) Is doubled c) Remains unchanged d) Is quadrupled

9. There is a $5\ \Omega$ resistance in an ac, circuit. Inductance of $0.1\ \text{H}$ is connected with it in series. If equation of ac *e.m.f.* is $5\sin 50t$, then the phase difference between current and *e.m.f.* is

- a) $\frac{\pi}{2}$ b) $\frac{\pi}{6}$ c) $\frac{\pi}{4}$ d) 0

10. In the alternating current shown in the figure, the currents through inductor and capacitor are $1.2\ \text{amp}$ and $1.0\ \text{amp}$ respectively. The current drawn from the generator is



- a) $0.4\ \text{amp}$ b) $0.2\ \text{amp}$ c) $1.0\ \text{amp}$ d) $1.2\ \text{amp}$

11. In a region of uniform magnetic induction $B = 10^{-2}\ \text{tesla}$, a circular coil of radius $30\ \text{cm}$ and resistance $\pi^2\ \text{ohm}$ is rotated about an axis which is perpendicular to the direction of B and which forms a diameter of the coil. If the coil rotates at $200\ \text{rpm}$ the amplitude of the alternating current induced in the coil is

- a) $4\pi^2\ \text{mA}$ b) $30\ \text{mA}$ c) $6\ \text{mA}$ d) $200\ \text{mA}$

12. In an $L - C - R$ circuit, capacitance is changed from C to $2C$. For the resonant frequency to remain unchanged, the inductance should be changed from L to

- a) $4L$ b) $2L$ c) $L/2$ d) $L/4$

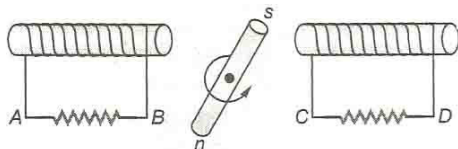
13. A bulb and a capacitor are in series with an ac source. On increasing frequency how will glow of the bulb change

- a) The glow decreases b) The glow increases
c) The glow remains the same d) The bulb quenches

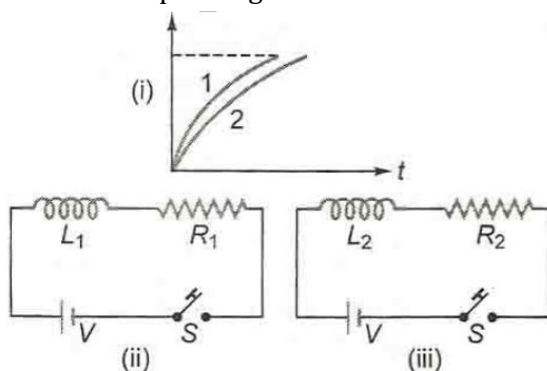
14. An alternating voltage is represented as $E = 20\sin 300t$. The average value of voltage over one cycle will be

- a) Zero b) $10\ \text{volt}$ c) $20\sqrt{2}\ \text{volt}$ d) $\frac{20}{\sqrt{2}}\ \text{volt}$

15. The magnet in figure rotates as shown on a pivot through its center. At the instant shown, what are the directions of the induced currents.



- a) A to B and C to D
b) B to A and C to D
c) A to B and D to C
d) B to A and D to C
16. A magnet is suspended lengthwise from a spring and while it oscillates, the magnet moves in and out of the coil C connected to a galvanometer G. Then as the magnet oscillates.
- a) G shows no deflection
b) G shows deflection on one side
c) Deflection of G to the left and right has constant amplitude
d) Deflection of G to the left and right has decreasing amplitude
17. Current growth in two $L - R$ circuits (ii) and (iii) is as shown in figure (i). Let L_1, L_2, R_1 and R_2 be the corresponding values in two circuits. Then



- a) $L_1 > L_2$
b) $L_1 < L_2$
c) $R_1 > R_2$
d) $R_1 = R_2$
18. An electric heater rated 220 V and 550 W is connected to A.C. mains. The current drawn by it is
- a) 0.8 A
b) 2.5 A
c) 0.4 A
d) 1.25 A
19. A resistor and a capacitor are connected in series with an AC source. If the potential drop across the capacitor is 5 V and that across resistor is 12 V, then applied voltage is
- a) 13 V
b) 17 V
c) 5 V
d) 12 V
20. An inductor of 2 H and a resistance of 10Ω are connected in series with a battery of 5 V. the initial rate of change of current is
- a) 0.5 As^{-1}
b) 2.0 As^{-1}
c) 2.5 As^{-1}
d) 0.25 As^{-1}