

Chapter : **Alternating Current**

Assignment 2

Class 12

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| **Class : XIIth Subject : PHYSICS**  **Date : DPP No. :2** |

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| **Topic :-Alternating Current** |

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| 1. | The power factor of an AC circuit having resistance *R* and inductance *L* (connected in series) and an angular velocity is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 2. | A uniformly wound solenoidal coil of self inductance H and resistance is broken up into two identical coils. These identical coils are then connected in parallel across a 12 V battery of negligible resistance. The time constant of the current in the circuit and the steady state current through battery is | | | | | | | |
|  | a) | s, 8 A | b) | s, 8 A | c) | s, 4 A | d) | s, 2 A |
| 3. | An alternating voltage is connected in series with a resistance and an inductance . If the potential drop across the resistance is and across the inductance is , then the applied voltage is | | | | | | | |
|  | a) | 350 | b) | 250 | c) | 500 | d) | 300 |
| 4. | The number of turns in a secondary coil is twice the number of turns in primary. A leclanche cell of 1.5 V is connected across the primary. The voltage across secondary is | | | | | | | |
|  | a) | 1.5 V | b) | 3.0 V | c) | 240 V | d) | Zero |
| 5. | When the rate of change of current is unity, induced emf is equal to | | | | | | | |
|  | a) | Thickness of coil | b) | Number of turns in coil | c) | Coefficient of self-induction | d) | Total flux linked  with coil |
| 6. | A coil of wire of certain radius has 100 turns and a self inductance of 15 mH. The self  inductance of a second similar coil of 500 turns will be | | | | | | | |
|  | a) | 75 mH | b) | 375 mH | c) | 15 mH | d) | None of these |
| 7. | The coefficient of induction of a choke coil is and resistance is . If it is connected to an alternating current source of frequency , then power factor will be | | | | | | | |
|  | a) | 0.32 | b) | 0.30 | c) | 0.28 | d) | 0.24 |
| 8. | A square loop of side a placed in the same plane as a long straight wire carrying a current The centre of the loop is at a distance r from the wire, where , figure. The loop is moved away from the wire with a constant velocity . The induced emf in the loop is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 9. | Voltage and current in an ac circuit are given by  and | | | | | | | |
|  | a) | Voltage leads the current by | | | b) | Current leads the voltage by | | |
|  | c) | Current leads the voltage by | | | d) | Voltage leads the current by | | |
| 10. | A coil is wound on a core of rectangular cross-section. If all the linear dimensions of core are increased by a factor 2 and number of turns per unit length of coil remains same, the self-inductance increases by a factor of | | | | | | | |
|  | a) | 16 | b) | 8 | c) | 4 | d) | 2 |
| 11. | The phase angle between m.f. and current in series as circuit is | | | | | | | |
|  | a) | 0 to | b) |  | c) |  | d) |  |
| 12. | The primary winding of a transformer has 200 turns and its secondary winding has 50 turns. If the current in the secondary winding is 40 A, the current in the primary is | | | | | | | |
|  | a) | 10 A | b) | 80 A | c) | 160 A | d) | 800 A |
| 13. | The initial phase angle for is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 14. | An inductor is connected to an AC source. When compared to voltage , the current in the lead wires | | | | | | | |
|  | a) | Is ahead in phase by | | | b) | Lags in phase by | | |
|  | c) | Is ahead in phase by | | | d) | Lags in phase by | | |
| 15. | An ac supply gives which passes through a resistance. The power dissipated in it is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | 45 |
| 16. | In a series circuit, operated with an ac of angular frequency , the total impedance is | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 17. | An series circuit is at resonance. Then | | | | | | | |
|  | a) | The phase difference between current and voltage is | | | | | | |
|  | b) | The phase difference between current and voltage is | | | | | | |
|  | c) | Its impedance is purely resistive | | | | | | |
|  | d) | Its impedance is zero | | | | | | |
| 18. | The voltage of domestic ac is . What does the represent | | | | | | | |
|  | a) | Mean voltage | | | b) | Peak voltage | | |
|  | c) | Root mean voltage | | | d) | Root mean square voltage | | |
| 19. | In an ideal transformer, the voltage is stepped down from 11 kV to 220 V. If the primary current be 100 A, the current in the secondary should be | | | | | | | |
|  | a) | 5 kA | b) | 1 kA | c) | 0.5 kA | d) | 0.1 Ka |
| 20. | If an resistance and reactance are present in an ac series circuit then the impedance of the circuit will be | | | | | | | |
|  | a) | 20 | b) | 5 | c) | 10 | d) |  |