PHYSICS

BOOKS - PUNJAB BOARD PREVIOUS YEAR PAPERS

ALTERNATING CURRENTS

Exersice

1. The instantaneous current from A.C.source is

l=55 Sin 3141. What is the peak value of current

?

Watch Video Solution

2. What is the peak value of 220V ac ?

Watch Video Solution

3. A 230 V variable frequency source is connected across a series combination of $L = 5H, C = 80\mu iF, R = 40\Omega$

calculateFrequency of the source which derives the circuit in resonance

Watch Video Solution

4. A 230 V variable frequency source is connected across a series combination of $L = 5H, C = 80\mu iF, R = 40\Omega$ calculate Impedence of the circuit at resonance

Watch Video Solution

5. A 230 V variable frequency source is connected across a series combination of $L = 5H, C = 80\mu iF, R = 40\Omega$ calculateAmplitude of the current at resonance

Watch Video Solution

6. A circuit consists of non inductive resistance of 50Ω, an inductance of 0.3 Henry and a capacitance of 40 microfarad in series and

supplied with acurrent of 200 V- 50Hz.Find impedence and current in the circuit.

Watch Video Solution

7. A 40Ω resistor, 3m H inductor and $2\mu F$ capacitor are connected in series to 110V, 5000 Hz AC source.Calculate Impedenceof the circuit and value of current in the circuit.

Watch Video Solution

8. When an inductor L and resistor R in series are connected across a 12 volts 50 Hertz supply a current of 0.5 ampere flows in thecircuit the circuit current differs in phase from applied voltage by $\frac{\pi}{3}$ Calculate the value R.

Watch Video Solution

9. A circuit consist of resistance 10 ohm and capacitance 0.1 microfarad. If an alternating

e.m.f. (electromotive force) of 100 volt and frequency 50 Hertz is applied, calculate the current in the circuit.

Watch Video Solution

10. In a series C- R circuit R = 30 ohms C = 0.25 microfarad, (μf) e.m.f. (electromotive force) = 100 volts and co = 10,000 radian/second. Find the current in the circuit and calculate voltage across resistor and the capacitor.

Watch Video Solution

11. A capacitor of capacitance 100μ and a coil of resistance $50\Omega$and inductance 0:5 henry are connected in series with a source of voltage 110V and frequency 50 hertz. Calculate the current in the circuit.

Watch Video Solution

12. An a.c. source of 200 V, 50 Hz is connected across a 400Ω resistor and capacitor of 25pF in series. Calculate reactance

Watch Video Solution

13. An a.c. source of 200 V, 50Hz is connected across a 300Ω resistor and capacitor of $\frac{25}{\pi}$ μF in series. Calculate (a) reactance: impedance

Watch Video Solution

14. An a.c. source of 200 V, 50Hz is connected across a 300Ω resistor and capacitor of $\frac{25}{\pi}$

μF in series. Calculate (a) reactance: current in the circuit.

Watch Video Solution

15. An a.c. source of 200 V, 50 Hz connected across a 400Ω resistor and an inductor of $\frac{3}{\pi}H$ in series. Calculate impedance

Watch Video Solution

16. An a.c. source of 200 V, 50 Hz connected across a 400Ω resistor and an inductor of $\frac{3}{\pi}H$ in series. Calculate impedance

Watch Video Solution

17. An a.c. source of 200 V, 50 Hz connected across a 400Ω resistor and an inductor of $\frac{3}{\pi}H$ in series. Calculatecurrent in the circuit.

Watch Video Solution

18. A capacitor of capacitance 100μ and a coil of resistance 50 ohm and inductance 0.5 Henry are connected in series with 110 volt and 50 Hz source. Calculate the impedance of the circuit.

Watch Video Solution

19. A 230 V variable frequency source is connected across a series combination of $L = 5H, C = 80\mu iF, R = 40\Omega$ calculateFrequency of the source which derives the circuit in resonance

Watch Video Solution

20. A 230 V variable frequency source is connected across a series combination of $L = 5H, C = 80\mu iF, R = 40\Omega$ calculate Impedence of the circuit at resonance

Watch Video Solution

21. A 230 V variable frequency source is connected across a series combination of

$L = 5H, C = 80\mu iF, R = 40\Omega$

calculateAmplitude of the current at resonance

Watch Video Solution

22. A series circuit with L = 0.12H, C = 0.48 mF and R = 25 ohm, is connected to a 220V variable frequency power supply. At what frequency is the circuit current maximum ?

Watch Video Solution

23. A capacitor of unknown value and an inductor of 0.1H and a resistor of $10\Omega$are connectedin series to a 220V, 50Hz ac source. It is foundthat the power factor of circuit is unity.Calculate the capacitance of capacitor and maximum amplitude of current

Watch Video Solution

24. A $60\mu F$ capacitor, a 0.3H inductor and a 50Ω resistor are connected in series with a

120V-60Hz a.c. source. Calculate the impedance of the circuit and current flowing in the circuit.

Watch Video Solution

25. A series LCR circuit with $R = 20\Omega$ (Ohm), L = 1,5H (Henry) and $C = 35\mu F$(Micro farad) is connected to a variable frequency 200 V (Volt) a.c. supply. When the frequency of the supply equals the natural frequency of the circuit, what is the average power transferred to the circuit in one complete cycle ?

Watch Video Solution

26. What is the relation between peak value and root mean square value of alternating e.m.f. ?

Watch Video Solution

27. What is the phase relationship between current and voltage in an inductor?

Watch Video Solution

28. What do you mean by power factor of an a.c. circuit ?

Watch Video Solution

29. Define inductive reactance of an inductor.

Watch Video Solution

30. What is Wattless current ?

Watch Video Solution

31. Define capacitive reactance of a capacitor.

Watch Video Solution

32. What is an idle current ?

Watch Video Solution

33. Define impedance of an a.c. circuit.

Watch Video Solution

34. What is the impedance of a circuit ?

Watch Video Solution

35. What is impedance of circuit at resonance ?

Watch Video Solution

36. For a circuit at resonance, voltage applied is $E = E_\circ \sin wt$ and current is $I = I_\circ \sin wt$, then power consumption in the circuit is :

A. $\frac{E_\circ 1_\circ}{2}$

B. $\frac{E_\circ 1_\circ}{\sqrt{2}}$

C. $\sqrt{2} E_\circ I_\circ$

D. 0

Answer:

Watch Video Solution

37. For a circuit at resonance, voltage applied is $E = E_\circ \sin wt$ and current is $I = I_\circ \sin wt$, then power consumption in the circuit is :

A. $\frac{E_\circ 1_\circ}{2}$

B. $\frac{E_\circ 1_\circ}{\sqrt{2}}$

C. $\sqrt{2} E_\circ I_\circ$

D. 0

Answer:

Watch Video Solution

38. Define resonant frequency of LCR series circuit.


Watch Video Solution

39. Which is more dangerous in use :a.c or d.c. ? Explain, why


Watch Video Solution

40. Define root mean square value of an alternating current.

Watch Video Solution

41. The frequency of an ac supply is doubled, what happens to inductive reactance X_L and capacitive reactance X_c ?

Watch Video Solution

42. How does capacitive reactance X_c of a capacitor vary in an a.c. and d.c. circuit ?

Watch Video Solution

43. How does inductive reactance.X_L of an inductor vary in d.c.and high frequency a.c. circuit ?

Watch Video Solution

44. Define root mean square value of an alternating current.

Watch Video Solution

45. Derive an our expressionforthe Power of an L.C.R.alternating current circuit. (Without different cases).

Watch Video Solution

46. Derive the relation for mean or average value of alternating current.

Watch Video Solution

47. An alternating e.m.f is supplied through apure inductance. Investigate the relationship between current flowing through it and the applied e.m.f.

Watch Video Solution

48. Derive an expression for average power in an LCR a.c. circuit.

Watch Video Solution

49. Prove mathematically that the average value of alternating current over one complete cycle is zero.

Watch Video Solution

50. Derive the expression for the impedance of an a.c. circuit with an inductor 'L', capacitor 'C' and a resistor 'R' in series. What iscondition of resonance ?

Watch Video Solution

51. Define root mean square value of an alternating current.

Watch Video Solution

52. What do you mean by the average value of a.c. ? Derive the expression for it.

53. Define root mean square value of an alternating current.

54. With the help of phasor diagram derive an expression for impedance in LCR circuit.

Watch Video Solution

55. Using phasor diagram, derive an expression for impedance of an a.c. circuit containing LCR in series.

Watch Video Solution

56. Define root mean square value of an alternating current.

Watch Video Solution

57. Derive a relation for the average power of an alternating current circuit containing LCR in series.How true power differ from virtual power in a.c. circuit.

Watch Video Solution

58. Derive an expression for average power of an AC (alternating current) circuit.

Watch Video Solution

59. Derive average power associated with pureinductor.

Watch Video Solution

60. Define impedance of an electric circuit. How it differs from ohmic resistance ? Find an expression for the impedance of an a.c. circuit containing L-C-R in series.

Watch Video Solution

61. Define impedance of an electric circuit. How it differs from ohmic resistance ? Find an expression for the impedance of an a.c. circuit containing L-C-R in series.

Watch Video Solution

62. Derive an expression for average power of an AC (alternating current) circuit.

Watch Video Solution

63. Find a phase relation between current and voltage in an a.c. circuit containing a pure inductor. Why high frequency current can not passthrough a pure inductor easily ?

Watch Video Solution

64. Finda phase relation between current and voltage in an a.c. circuit containing a pure capacitance. A pure capacitor blocks directcurrent, why ?

Watch Video Solution

65. Derive an expression for average power of an AC (alternating current) circuit.

Watch Video Solution

66. What is meant by mean or average value of alternating current ? Show that mean value of ac over a complete cycle is zero.

Watch Video Solution