PHYSICS

BOOKS - R G PUBLICATION

ELECTROMAGNETIC INDUCTION

Exercise

1. Give the dimensions of Tesla.

Watch Video Solution

2. How are eddy currents minimised in a transformer?

Watch Video Solution

3. Define 1 tesla. Write down the expression of Lorentz force acting on a charged particle.

Watch Video Solution

4. State len's Law of electromagnetic induction. Establish that lenz's Law is the manifestation of Law of conservation of energy.

Watch Video Solution

5. A coil of self inductance 20mH is connected to an a.c source of 220v and of frequency 50Hz. What is the inductive reactance and r.m.s current in the circuit?

Watch Video Solution

6. Describe the role of the following in the processes mentioned: NaCN in the extraction of silver forms silver ore.

Watch Video Solution

7. A rectangular coil of turns n and area A isrotating withangular velocity a in a uniform magnetic field B .Find an expression for the e.m.f generatedin the coil.

Watch Video Solution

8. State len's Law of electromagnetic induction. Establish that lenz's Law is the manifestation of Law of conservation of energy.

Watch Video Solution

9. Show that total energy required to build up a current I in an inductor of coefficient of induction L is $\frac{1}{2}LI^2$.

Watch Video Solution

10. A metal rod of length L meter rotates about one end in a vertical plane at right angles to the magnetic-meridian. Frequency of revolution is f Hz.If the horizontal component of Earth's magnetic field is H Tesla then find the expression of inducted emf between the ends of the rod.

Watch Video Solution

11. A thin dielectric disc uniformly distritbuted with charge q has radius r and is rotated n times per second about an axis perpendicular to the disc and passing through the centre. Find the magnetic induction at the centre of the disc.

Watch Video Solution

12. What is electic current?

Watch Video Solution

13. Explain Lenz's law considering a closed conducting coil and a bar magnet.

Watch Video Solution

14. A square loop of a conducting material of side and resistance r is dragged through a uniform magnetic field B with uniform velocity ν keeping the plane of the loop perpendicular to the direction ofthe field. What isthe current flowing through the loop?

Watch Video Solution

15. Define Coefficients of self induction write their SI units.

Watch Video Solution

16. Briefly explain the working of A.C. generator.

Watch Video Solution

17. An inductor of self inductance L = 50 mH is connected in series with a non inductive resistor of resistance R = 10Ω. A source of e.m.f $\varepsilon = (100 \sin 50\pi t)$ Volt is connected in the circuit. Find the reactance of the coil

Watch Video Solution

18. An inductor of self inductance L = 50 mH is connected in series with a non inductive resistor of resistance R = 10Ω. A source of e.m.f $\varepsilon = (100 \sin 50\pi t)$ Volt is connected in the

circuit. Find the

impedance of the circuit

Watch Video Solution

19. An inductor of self inductance L = 50 mH is connected in series with a non inductive resistor of resistance R = 10Ω. A source of e.m.f $\varepsilon = (100 \sin 50\pi r)$ Volt is connected in the circuit. Find the

rms voltage drop across the inductor.

Watch Video Solution

20. Fill in the blanks

An ac generator converts mechanical energy into ___energy.

Watch Video Solution

21. Fill in the blanks

The self-induced emf is given by_____

Watch Video Solution

22. Fill in the blanks

The self-inductance of a coil depends on its geometry and on the ____of the medium.

Watch Video Solution

23. State Faraday's law of electromagnetic induction.

Watch Video Solution

24. What is magnetic flux Φ?

Watch Video Solution

25. Write the SI unit of magnetic flux?

Watch Video Solution

26. State Faraday's law of electromagnetic induction.

Watch Video Solution

27. What is motional emf?

Watch Video Solution

28. What is inductance? Write its dimension.

Watch Video Solution

29. Write the SI unit of inductance.

Watch Video Solution

30. What is mutual inductance.

Watch Video Solution

31. What is inductance? Write its dimension.

Watch Video Solution

32. Write the SI unit of inductance.

Watch Video Solution

33. What is mutual inductance.

Watch Video Solution

34. What is hydro-electric generator?

Watch Video Solution

35. What is thermal generators?

Watch Video Solution

36. Give one example in which the phenomenon of electromagnetic induction has been technologically exploited?

Watch Video Solution

37. Write the unit of magnetic flux and self inductance.

Watch Video Solution

38. Write the dimensions of magnetic flux and emf.

Watch Video Solution

39. Write the dimensions of magnetic flux and emf.

Watch Video Solution

40. A wire is in N-S direction is dropped freely, will any potential difference induced across it?

Watch Video Solution

41. What is eddy current? State two applications of eddy current.

Watch Video Solution

42. Write the unit of magnetic flux and self inductance.

Watch Video Solution

43. What is one henry?

Watch Video Solution

44. Is induced electric field conserved or non conserved.

Watch Video Solution

45. Write the different use of eddy current.

Watch Video Solution

46. Explain why electric lines of force donot cross each other.

Watch Video Solution

47. State Lenz's law.

Watch Video Solution

48. Write the unit of magnetic flux and self inductance.

Watch Video Solution

49. What is the relation between Weber and Maxwell?

Watch Video Solution

50. How does energy stored in a inductor?

Watch Video Solution

51. What do you mean by self induction of a circuit?

Watch Video Solution

52. Why is spark produced in the switch off a fan when it is put off?

Watch Video Solution

53. Write Fleming's left hand rule.

Watch Video Solution

54. Write the experimental procedure carried ouyt by Faraday, that relative motion between

a bar magnet and a wiore loop produce current.

Watch Video Solution

55. How do an eddy current generate?

Watch Video Solution

56. Three inductance are connected as shown is fig. Calculate the resultant inductance.

Watch Video Solution

57. What is alternating current?

Watch Video Solution

58. What is nuclear power generator.

Watch Video Solution

59. State Faraday's law of electromagnetic induction.

Watch Video Solution

60. Explain the concept of magnetic flux. Discuss its units and demension.

Watch Video Solution

61. State Lenz's law.

Watch Video Solution

62. Discuss briefly various method of producing induced emf.

Watch Video Solution

63. Explain the phenomenon of self induction. Define co-efficient of self induction.

Watch Video Solution

64. A 10 henry inductor carries a current 2A. How can a 100 volt self induced emf be made to appear in the inductor?

Watch Video Solution

65. The magnetic flux through a coil of 50 turns changes from 0.3wb per turn to zero in 1sec. Calculate the emf induced across the two ends of the coils.

Watch Video Solution

66. Why are coils in resistance box double wounded?

Watch Video Solution

67. State Lenz's law.

Watch Video Solution

68. A wheel with 25 metallic spokes each 0.4m long is rotated with a speed of 150 $rev/\ \min$ in a plane normal to the horizontal components of earth's magnetic field H_B at a place. If $H_E = 0.4G$ at the place, what is the induced emf between the axle and the rim of the wheel?

Watch Video Solution

69. Write the different use of eddy current.

Watch Video Solution

70. Write in brief the basic principles behind the modern ac generator machine.

Watch Video Solution

71. Draw the various stages of generating an alternating current by a loop[of wire rotating in a magnetic filed.

Watch Video Solution

72. Show that the magnetic flux through a surface of area A placed in a uniform magnetic field B is defined as $\phi_B = BA\cos\theta$

where θ is the angle between $\vec{A}$ and $\vec{B}$.

Watch Video Solution

73. Deduce an expression for the self inductance of a long solenoid, the core of which consists of a magnetic material of permiability μ_r

Watch Video Solution

74. Current in a circuit falls from 4.8A to 0.2A in 0.1s. If an average emf of 220V induced, give an estimate of the self inductance of the circuit.

Watch Video Solution

75. A pair of adjacent coils has a mutual inductance of 1.2H. If the current in one coil

changes from 0 to 18A in 0.4s, what is the change in flux linkage with the other cell?

Watch Video Solution

76. What is mutual induction? What are the factors upon which it depends?

Watch Video Solution

77. State len's Law of electromagnetic induction. Establish that lenz's Law is the

manifestation of Law of conservation of energy.

Watch Video Solution

78. A current of 10A is reduced to zero at a uniform rate in $10^{-3}s$. If co-efficient of mutual induction is 3H. What is the induced emf in the secondary?

Watch Video Solution

79. What is mutual induction? What are the factors upon which it depends?

Watch Video Solution

80. The magnetic flux through a coil perpendicular to its plane and directed into paper varying according to the relation $\phi = \left(5t^2 + 10t + 5\right)$ mWb. Calculate the emf induced at t= 5 sec.

Watch Video Solution

81. Calculate the self inductance of the coil of 1000 turns in which current of 4A produces flux of 400 Maxwell.

Watch Video Solution

82. A coil has an inductance of .2 henry. Calculate the value of induced emf when the current in the coil is changing at the rate of 150 ampere per sec.

Watch Video Solution

83. What is a transformer? On what principle it is based?

Watch Video Solution

84. A step up transformer with 150 turns primary and 1500 turns in secondary works at 95% efficiency. The primary draw a current 2.5A when connected to 220V a.c. Calculate the current and voltage in secondary.

Watch Video Solution