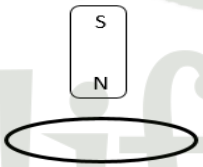
Chapter: Electromagnetic Induction (Assignment)

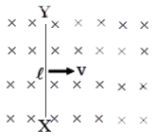
MCQS

1. Whenever the magnetic flux linked with an electric circuit change, an emf is induced in the circuit. This is called
   a. Electromagnetic induction c. Lenz's law
   b. c. hysteresis loss d. Kirchhoff's laws
2. In electromagnetic induction, the induced charge is independent of
   a. change of flux b. time c. Resistance of the coil d. None of these
3. Lenz's law is a consequence of the law of conservation of
   a. charge b. mass c. energy d. momentum
4. A magnet is moved towards a coil (i) quickly (ii) slowly, then the induced e.m.f. is
   a. larger in case (i) c. smaller in case (i)
   b. equal to both the cases d. None
5. The current flows from A to B is as shown in the figure is increasing. The direction of the induced current in the loop is
   a. clockwise. c. Anticlockwise.
   b. Straight line produced d. no induced e.m.f.

6. The flux linked with the coil at any instant $'t'$ is given by, $\emptyset = 10t^2 - 50t + 250$. The magnitude of induced emf at $t = 3sec$ is,
   a. $10V$ b. $20V$ c. $30V$ d. $40V$
7. A coil of area A and resistance R is kept in a uniform magnetic field B normal to plane of coil, the charge induced in the coil if it is revolved end to end is,
   a. $Zero$ b. $\frac{BA}{R}$ c. $\frac{BA}{2R}$ d. $\frac{2BA}{R}$
8. What is the induced emf in a coil if the flux associated with it changes at the rate of 1 $weber\ per\ minute$,
   a. $1V$ b. $\frac{1}{60}V$ c. $60V$ d. $zero$
9. In the given figure, a bar magnet falls freely through the metal ring. The acceleration (a) of the bar magnet is, $(g = accln\ due\ to\ gravity)$
   a. $a = g$ b. $a < g$
   c. $a > g$ d. $a = 0$



10. The self-inductance of a coil is a measure of
    a. electrical inertia c. electrical friction
    b. Induced e.m.f. d. Induced current
11. Two coils are placed closed to each other. The mutual inductance of the pair of coils depends upon
    a. the rate at which currents are changing in the two coils.
    b. relative position and orientation of two coils.
    c. The material of the wires of the coils.
    d. The currents in the two coils
12. When current in a coil changes from 5 A to 2 A in 0.1 s, average voltage of 50 V is produced. The self-inductance of the coil is
    a. 1.67 H b. 6 H c. 3 H d. 0.67 H
13. If a conductor $0.2m$ long moves with a velocity of $0.3m/s$ in a magnetic field of $5T$, calculate the emf induced if magnetic field, velocity and length of conductor are mutually perpendicular to each other.
    a. $0.03V$ b. $0.3V$ c. $3V$ d. $30V$
14. An emf of $16V$ induced in a coil of inductance $4H$. The rate of change of current must be,
    a. $4As^{-1}$ b. $16As^{-1}$ c. $32As^{-1}$ d. $64As^{-1}$
15. Transformer core are laminated in order to,
    a. Reduce copper loss c. Minimize eddy current loss
    b. Reduce hysteresis loss d. To reduce magnetic effect
16. A conducting rod XY moves parallel to $x - axis$ in a uniform magnetic field pointing inwards to the plane of paper. The end X of the rod gets,
    a. Positively charged b. Negatively charged
    b. Neutral d. Alternatively, changed



17. If the length of solenoid is doubled and the number of turns doubled, keeping the area constant, the inductance becomes,
    a. Doubled b. Halved c. Constant d. Quadrupled
18. The power loss in a transformer working on a $220V$ AC supply is 30%. The ratio of primary to secondary current when the output voltage is $110V$ is,
    a. 1:2 b. 2:1 c. 1:1 d. 5:7
19. In an ac generator, a coil with N turns, all of the same area A and total resistance R, rotates with frequency to in a magnitude field B. The maximum value of emf generated in the coil is
    a. NABR b. NABω c. NABRω d. NAB