



CBSE NCERT Based Chapter wise Questions (2025-2026)

Class-XII

Subject: Physics

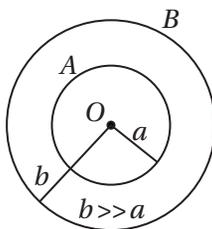
Chapter Name : *Electro Magnetic Induction* (Chapter : 6)

Total : 07 Marks (expected) [MCQ(2)-1 Mark, SA(1)-2 Marks, LA(1)-3 Marks]

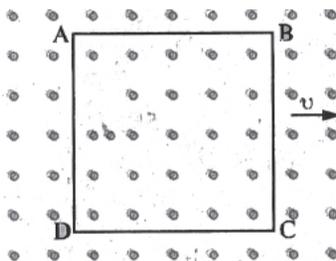
Level - 2(Higher Order)

MCQ Type Questions :

1. Two conducting circular loops *A* and *B* are placed in the same plane with their centres coinciding as shown in figure. The mutual inductance between them is:



- (A) $\frac{\mu_0 \pi a^2}{2b}$ (B) $\frac{\mu_0 b^2}{2\pi a}$ (C) $\frac{\mu_0 \pi b^2}{2a}$ (D) $\frac{\mu_0 a^2}{2\pi b}$
2. In a coil, the current changes from $-2A$ to $+2A$ in 0.2 s and induces an emf of 0.1 V. The self-inductance of the coil is:
- (A) 5 mH (B) 1 mH (C) 2.5 mH (D) 4 mH
3. A coil having 500 turns of square shape each of side 10 cm is placed normal to a magnetic field which is increasing at 1 T s^{-1} . the induced e.m.f. is
- (A) 0.1 V (B) 0.5 V (C) 1 V (D) 5 V
4. A current carrying infinitely long wire is kept along the diameter of a circular wire loop, without touching it, the correct statement(s) is (are)
- (A) The emf induced in the loop is zero if the current is constant
(B) The emf induced in the loop is finite if the current is constant
(C) The emf induced in the loop is zero if the current decreases at a steady rate
(D) The emf induced in the loop is infinite if the current decreases at a steady rate.
5. A 800 turn coil of effective area 0.05 m^2 is kept perpendicular to a magnetic field $5 \times 10^{-5} \text{ T}$. When the plane of the coil is rotated by 90° around any of its coplanar axis in 0.1 s, the emf induced in the coil will be :
- (A) 2 V (B) 0.2 V (C) $2 \times 10^{-3} \text{ V}$ (D) 0.02 V
6. A metallic square loop *ABCD* is moving in its own plane with velocity *v* in a uniform magnetic field perpendicular to its plane as shown in figure. An e.m.f. is induced

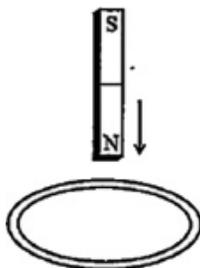


- (A) in *AD* but not in *BC* (B) in *BC* but not in *AD*
(C) neither in *AD* nor in *BC* (D) in both *AD* and *BC*

7. The magnetic energy stored in an inductor of inductance $4 \mu\text{H}$ carrying a current of 2 A is
 (A) $8 \mu\text{J}$ (B) mJ (C) $4 \mu\text{J}$ (D) 4 mJ
8. Two coils have a mutual inductance 0.005 H . The $I = I_0 \sin \omega t$ where $I_0 = 10 \text{ A}$ and $\omega = 100\pi \text{ rad s}^{-1}$. The maximum value of emf in the second coil is
 (A) 2π (B) 5π (C) 6π (D) 12π

Short Answer Type Questions (2 marks)

9. A bar magnet falls from height h through a metal ring. Will its acceleration be equal to g ? Give reason for your answer?



10. An artificial satellite with a metal surface is orbiting the earth around the poles. Will the earth's magnetism induced a current in it?
11. A light metal disc on the top of an electromagnet is thrown up as the current is switched on. Why?
12. Differentiate between self induction and mutual induction.
13. Derive the expression of motional electromotive force.

ANSWER

1. (A)	6. (D)	11.	16.	21.
2. (A)	7. (A)	12.	17.	22.
3. (D)	8. (B)	13.	18.	
4. (A)	9.	14.	19.	
5. (D)	10.	15.	20.	