



Class 12 Physics | Electromagnetic Induction

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. For θ between B and the area normal, magnetic flux through a planar loop is:

- A. B/A B. A/B C. $BA \sin\theta$ always D. $BA \cos\theta$

2. A 0.02 m^2 loop is normal to a 0.5 T field. Flux is:

- A. 10 Wb B. 0.25 Wb C. 0.04 Wb D. 0.01 Wb

3. Faraday's law relates induced emf to rate of change of:

- A. Electric charge
B. Resistance
C. Magnetic flux linkage
D. Mass

4. Flux through each of 100 turns changes by 0.02 Wb in 0.1 s . Average emf magnitude is:

- A. 2 V B. 200 V C. 0.2 V D. 20 V

5. The negative sign in Faraday's law expresses:

- A. Ohm's law B. Gauss's law
C. Lenz's law D. Coulomb's law

6. Lenz's law is consistent with conservation of:

- A. Energy B. Charge only
C. Angular speed D. Mass only

7. A rod of length 0.5 m moves at 4 m/s perpendicular to $B=0.2 \text{ T}$, with rod perpendicular to both. Emf is:

- A. 0.04 V B. 0.4 V C. 2.5 V D. 4 V

8. A stationary loop in a uniform time-independent B has induced emf:

- A. B/A B. BA C. Zero D. Infinite

9. A bar magnet approaching a closed coil induces current that:

- A. Has no magnetic effect
B. Opposes its approach magnetically
C. Continues unchanged after all motion stops
D. Always attracts the magnet

10. SI unit of inductance is:

- A. Weber B. Tesla C. Henry D. Farad

11. A 2 H inductor has current changing at 3 A/s . Self-induced emf magnitude is:

- A. 0.67 V B. 5 V C. 6 V D. 1.5 V

12. An inductor opposes changes in:

- A. Resistance only
B. Temperature only
C. Constant magnetic flux only
D. Current

13. Energy in a 0.5 H inductor carrying 4 A is:

- A. 4 J B. 8 J C. 1 J D. 2 J

14. If inductor current doubles, stored magnetic energy becomes:

- A. Unchanged B. Four times C. Half D. Twice

15. In mutual induction, emf in a secondary coil arises from:

- A. Earth's electric field
B. Constant primary current always
C. Secondary resistance alone
D. Changing current in the primary coil

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.C 4.D 5.C 6.A 7.B 8.C 9.B 10.C 11.C 12.D 13.A 14.B 15.D