

# Electromagnetic Induction

1. The north pole of a long bar magnet was pushed slowly into a short solenoid connected to a short galvanometer. The magnet was held stationary for a few seconds with the north pole in the middle of the solenoid and then withdrawn rapidly. The maximum deflection of the galvanometer was observed when the magnet was

- (a) moving towards the solenoid
- (b) moving into the solenoid
- (c) at rest inside the solenoid
- (d) moving out of the solenoid

▼ **Answer**

Answer: d

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2. The magnetic flux linked with a coil of  $N$  turns of area of cross section  $A$  held with its plane parallel to the field  $B$  is

- (a)  $\frac{NAB}{2}$     (b)  $NAB$     (c)  $\frac{NAB}{4}$     (d) zero

▼ **Answer**

Answer: d

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3. Faraday's laws are consequence of the conservation of

- (a) charge
- (b) energy
- (c) magnetic field
- (d) both (b) and (c)

▼ **Answer**

Answer: b

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4. Two identical coaxial coils P and Q carrying equal amount of current in the same direction are brought nearer. The current in

- (a) P increases while in Q decreases
- (b) Q increases while in P decreases
- (c) both P and Q increases
- (d) both P and Q decreases

▼ **Answer**

Answer: d

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5. Direction of current induced in a wire moving in a magnetic field is found using

- (a) Fleming's left hand rule
- (b) Fleming's right hand rule
- (c) Ampere's rule
- (d) Right hand clasp rule

▼ **Answer**

Answer: b

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6. Lenz's law is a consequence of the law of conservation of

- (a) charge
- (b) energy
- (c) induced emf
- (d) induced current

▼ **Answer**

Answer: b

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7. A solenoid is connected to a battery so that a steady current flows through it. If an iron core is inserted into the solenoid, the current will

Answer: d

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- (a) increase
- (b) decrease
- (c) remain same
- (d) first increase then decrease

▼ **Answer**

Answer: b

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8. Which of the following statements is not correct?

- (a) Whenever the amount of magnetic flux linked with a circuit changes, an emf is induced in circuit.
- (b) The induced emf lasts so long as the change in magnetic flux continues.
- (c) The direction of induced emf is given by Lenz's law.
- (d) Lenz's law is a consequence of the law of conservation of momentum.

▼ **Answer**

Answer: d

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9. There is a uniform magnetic field directed perpendicular and into the plane of the paper. An irregular shaped conducting loop is slowly changing into a circular loop in the plane of the paper. Then

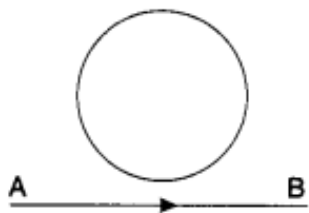
- (a) current is induced in the loop in the anti-clockwise direction.
- (b) current is induced in the loop in the clockwise direction.
- (c) ac is induced in the loop.
- (d) no current is induced in the loop.

▼ **Answer**

Answer: a

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10. In the given figure current from A to B in the straight wire is decreasing. The direction of induced current in the loop is A



- (a) clockwise
- (b) anticlockwise
- (c) changing
- (d) nothing can be said

▼ **Answer**



Answer: b

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11. The north pole of a bar magnet is rapidly introduced into a solenoid at one end (say A). Which of the following statements correctly depicts the phenomenon taking place?

- (a) No induced emf is developed.
- (b) The end A of the solenoid behaves like a south pole.
- (c) The end A of the solenoid behaves like north pole.
- (d) The end A of the solenoid acquires positive potential.

▼ **Answer**

Answer: c

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12. A metal plate can be heated by

- (a) passing either a direct or alternating current through the plate.
- (b) placing in a time varying magnetic field.
- (c) placing in a space varying magnetic field, but does not vary with time.
- (d) both (a) and (b) are correct.

▼ **Answer**

Answer: d

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13. Identify the wrong statement.

- (a) Eddy currents are produced in a steady magnetic field.
- (b) Eddy currents can be minimized by using laminated core.
- (c) Induction furnace uses eddy current to produce heat.
- (d) Eddy current can be used to produce braking force in moving trains.

▼ **Answer**

Answer: a

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14. Which of the following does not use the application of eddy current?

- (a) Electric power meters
- (b) Induction furnace
- (c) LED lights
- (d) Magnetic brakes in trains

▼ **Answer**

Answer: c

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15. If number of turns in primary and secondary coils is increased to two times each, the mutual inductance

- (a) becomes 4 times
- (b) becomes 2 times
- (c) becomes A times
- (d) remains unchanged 4

▼ **Answer**

Answer: a

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16. When the rate of change of current is unity, the induced emf is equal to

- (a) thickness of coil
- (b) number of turns in coil
- (c) coefficient of self inductance
- (d) total flux linked with coil

▼ **Answer**

Answer: c

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17. Two inductors of inductance  $L$  each are connected in series with opposite magnetic fluxes.

The resultant inductance is  
(Ignore mutual inductance)

- (a) zero
- (b)  $L$
- (c)  $2L$
- (d)  $3L$

▼ **Answer**

Answer: c

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