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 The magnet was held stationary for a few seconds with the north pole in the middle of the solenoid and then withdrawn rapidly.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

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

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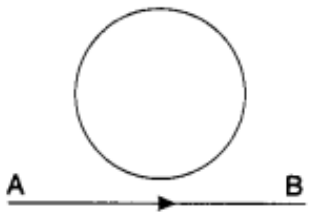
10. In the given figure current from A to B in the straight wire is decreasing. The direction of induced current in the loop is A



(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 oic 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
