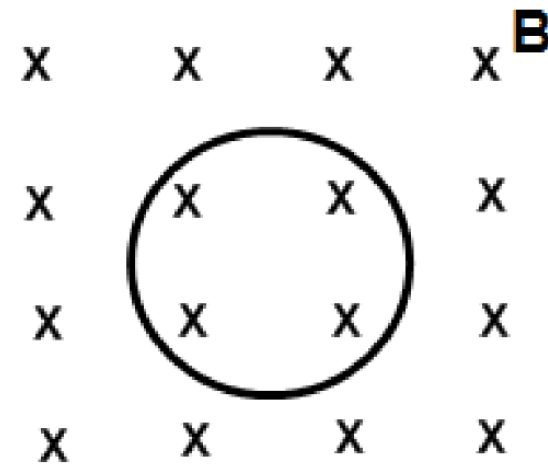


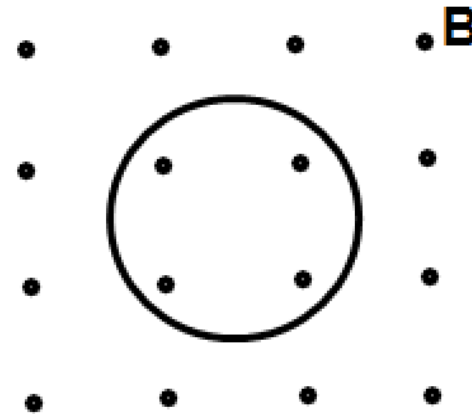
- 1 A loop of wire is placed in a perpendicular magnetic field. Suddenly, the magnitude of the magnetic field begins to increase, what is the direction of the induced current in the loop?

- ☐ A Clockwise.
- ☐ B Counter-clockwise.
- ☐ C Out of the page.
- ☐ D Into the page.
- ☐ E There is no induced current in the loop.



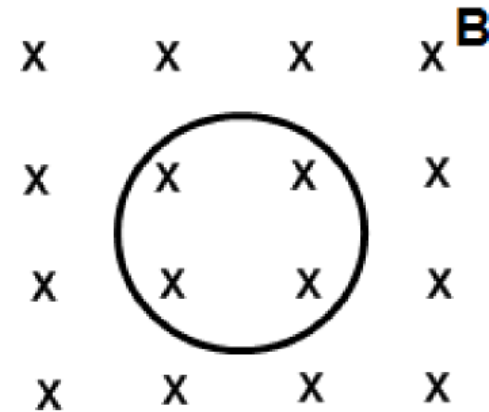
- 2** A loop of wire is placed in a perpendicular magnetic field. Suddenly, the magnitude of the magnetic field begins to increase, what is the direction of the induced current in the loop?

- ☐ **A** Clockwise.
- ☐ **B** Counter-clockwise.
- ☐ **C** Out of the page.
- ☐ **D** Into the page.
- ☐ **E** There is no induced current in the loop.



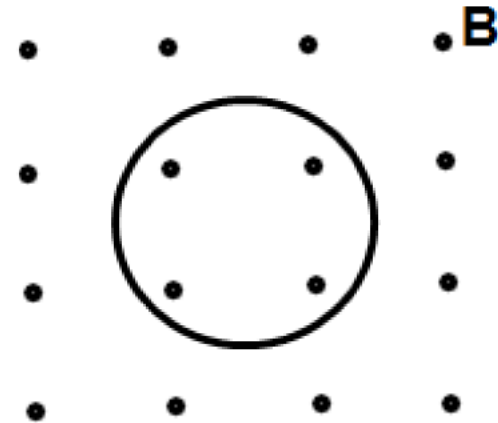
- 3** A loop of wire is placed in a perpendicular magnetic field. Suddenly, the magnitude of the magnetic field begins to decrease, what is the direction of the induced current in the loop?

- ☐ **A** Clockwise.
- ☐ **B** Counter-clockwise.
- ☐ **C** Out of the page.
- ☐ **D** Into the page.
- ☐ **E** There is no induced current in the loop.



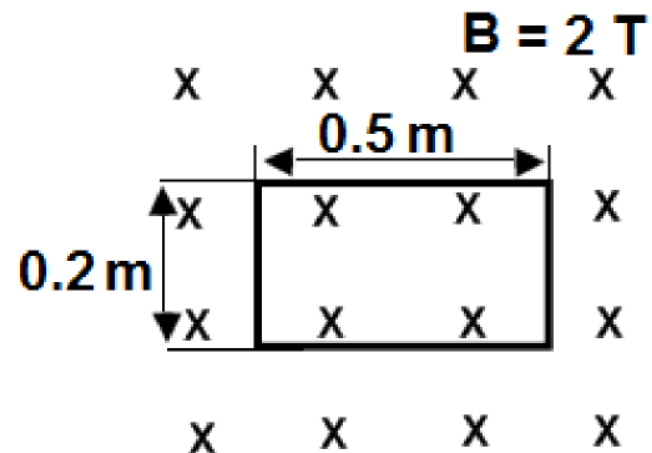
- 4** A loop of wire is placed in a perpendicular magnetic field. Suddenly, the magnitude of the magnetic field begins to decrease, what is the direction of the induced current in the loop?

- ☐ **A** Clockwise.
- ☐ **B** Counter-clockwise.
- ☐ **C** Out of the page.
- ☐ **D** Into the page.
- ☐ **E** There is no induced current in the loop.



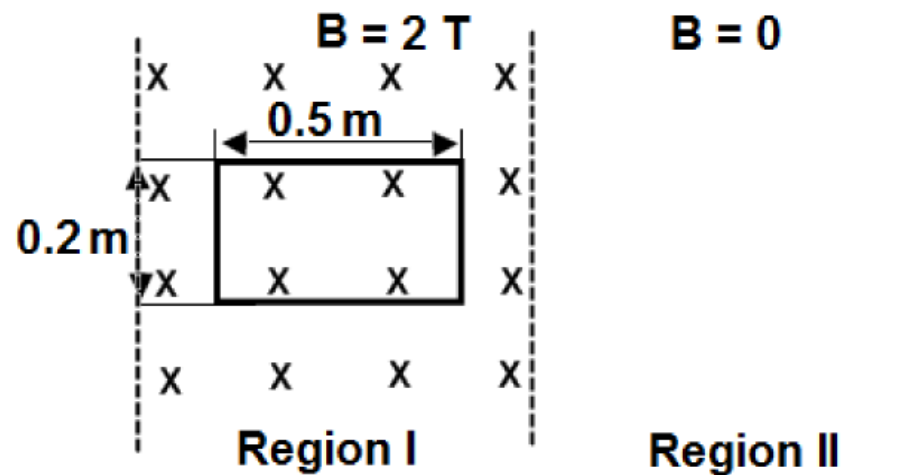
- 5** A rectangular loop of wire with dimensions 0.2 m x 0.5 m is placed in a uniform magnetic field of magnitude 2 T. The magnetic field is perpendicular to the plane of the loop. What is the magnetic flux in the loop?

- ☐ **A** 0.1 Wb
- ☐ **B** 0.2 Wb
- ☐ **C** 0.3 Wb
- ☐ **D** 0.4 Wb
- ☐ **E** 0.5 Wb

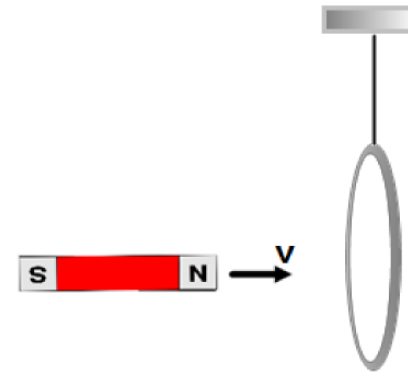


- 6** A rectangular loop of wire with dimensions $0.2\text{ m} \times 0.5\text{ m}$ is placed in a uniform magnetic field of magnitude 2 T . The magnetic field is perpendicular to the plane of the loop. The loop is moved from region I to region II in 0.05 s ? What is the induced emf in the loop?

- ☐ **A** 1 V
- ☐ **B** 2 V
- ☐ **C** 3 V
- ☐ **D** 4 V
- ☐ **E** 5 V

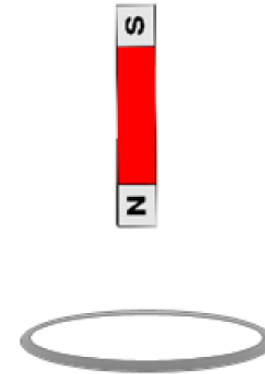


- 7** A magnet bar is moved toward a vertical conducting ring that is suspended at the end of a string. What happens to the ring during the time when the magnet approaches it?



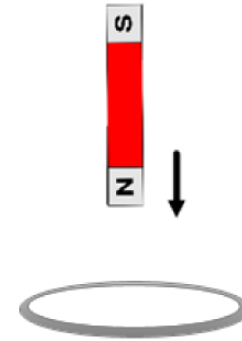
- ☐ **A** The ring will move toward the magnet.
- ☐ **B** The ring will move away from the magnet.
- ☐ **C** The ring will remain stationary.
- ☐ **D** The ring will tend to turn in clockwise direction.
- ☐ **E** The ring will tend to turn in counter-clockwise direction.

- 8** A magnet bar with the north pole faced downward is held above a horizontal circular coil. Which of the following statements about the induced current is true (viewed from above)?



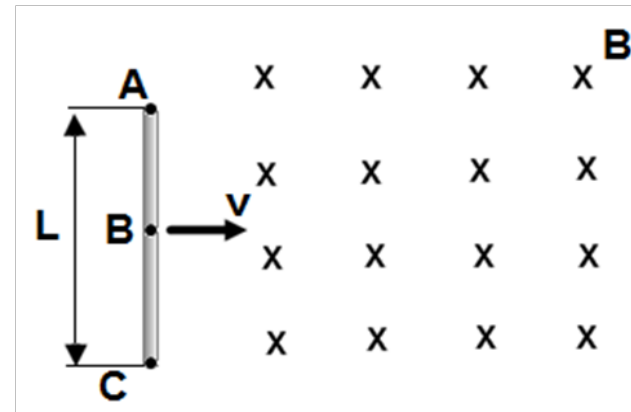
- ☐ **A** The induced current flows in a clockwise direction.
- ☐ **B** The induced current flows in a counter-clockwise direction.
- ☐ **C** The induced current flows first in a clockwise and then in a counter-clockwise direction.
- ☐ **D** The induced current flows first in a counter-clockwise and then in a clockwise direction.
- ☐ **E** There is no induced current in the coil.

- 9** A bar magnet with the north pole faced downward is dropped above a horizontal circular coil. Which of the following statements about the induced current is true (viewed from above)?



- ☐ **A** The induced current flows in a clockwise direction.
- ☐ **B** The induced current flows in a counter-clockwise direction.
- ☐ **C** The induced current flows first in a clockwise and then in a counter-clockwise direction.
- ☐ **D** The induced current flows first in a counter-clockwise and then in a clockwise direction.
- ☐ **E** There is no induced current in the coil.

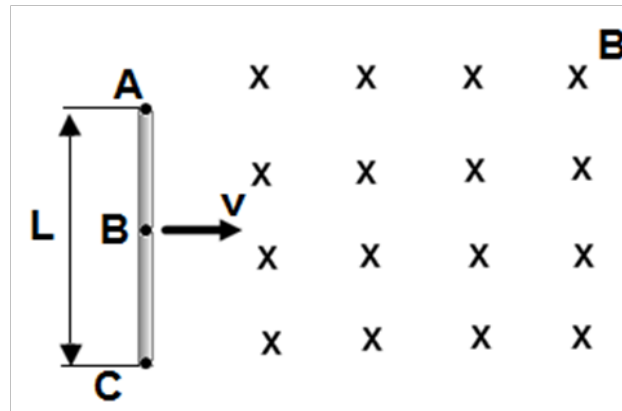
- 10** A metal rod with a length of L moves at a constant velocity through a uniform magnetic field of magnitude B . The magnetic field is perpendicular to the rod. Which of the following is true about the electric potential in the rod?



- ☐ **A** Point A has higher potential.
- ☐ **B** Point B has higher potential.
- ☐ **C** Point C has higher potential.
- ☐ **D** Point A and B have the same potential.
- ☐ **E** Point A and C have the same potential.

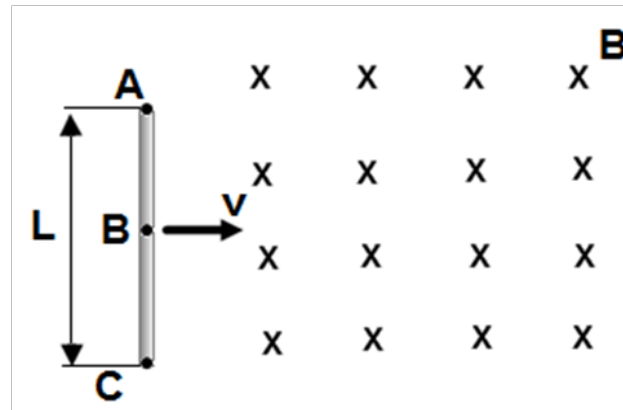
- 11** A metal rod with a length of L moves at a constant velocity through a uniform magnetic field of magnitude B . The magnetic field is perpendicular to the rod. What is the potential difference between point A and B?

- ☐ **A** Bv
- ☐ **B** vL
- ☐ **C** BL
- ☐ **D** BLv
- ☐ **E** Potential difference is zero.

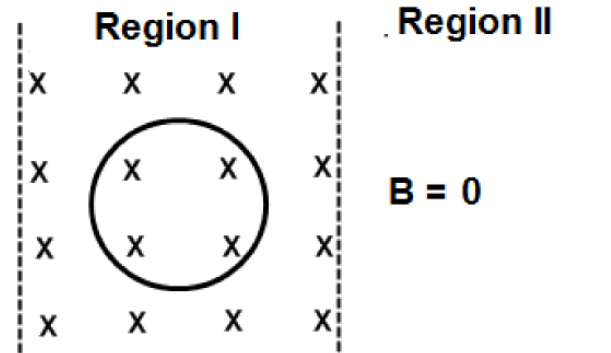


- 12** A metal rod with a length of L moves at a constant velocity through a uniform magnetic field of magnitude B . The magnetic field is perpendicular to the rod. What is the induced electric field in the rod?

- ☐ **A** Bv
- ☐ **B** vL
- ☐ **C** BL
- ☐ **D** BLv
- ☐ **E** There is no electric field in the rod.

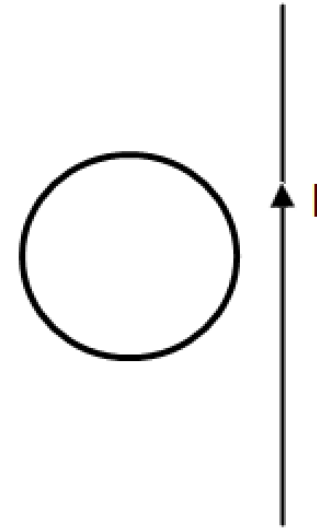


- 13** A circular loop of wire is placed in a perpendicular uniform magnetic field. Which of the following will not produce an induced current in the loop?



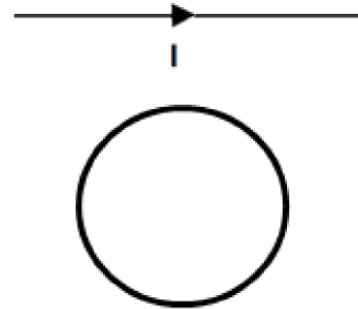
- ☐ **A** Move the loop to region II.
- ☐ **B** Rotate the loop with respect to its diameter.
- ☐ **C** Rotate the loop with respect to its center.
- ☐ **D** Stretch the loop and change its area.
- ☐ **E** None from the above.

14 A steady current, I , flows through a straight wire. A circular loop of wire is placed next to the wire. Which of the following will not produce an induced current in the loop?



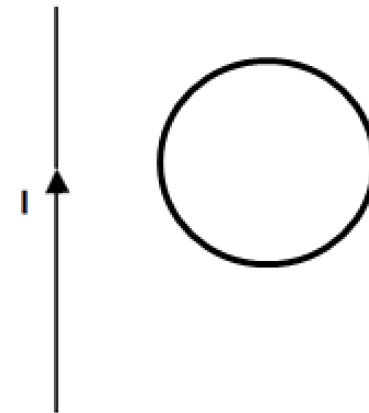
- ☐ **A** Move the loop away from the wire.
- ☐ **B** Move the loop toward the wire.
- ☐ **C** Increase the electric current in the wire.
- ☐ **D** Decrease the electric current in the wire.
- ☐ **E** Move the loop in parallel to the wire.

- 15** A current-carrying wire lies on a horizontal table. A circular coil is placed next to the loop. The current suddenly grows stronger. What is the direction of the induced current in the coil?



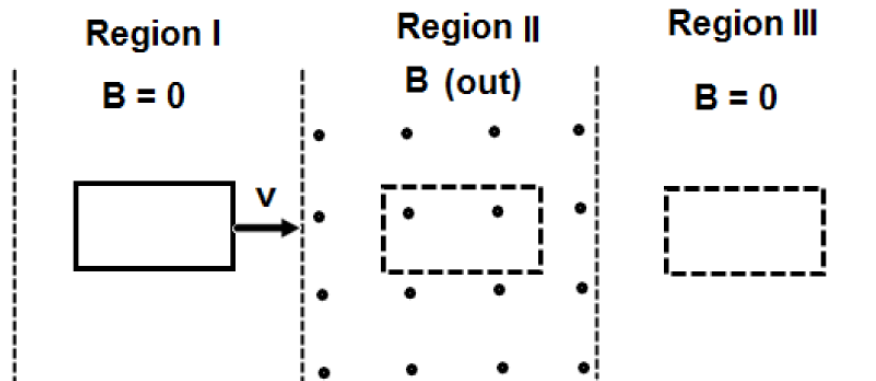
- ☐ **A** Clockwise.
- ☐ **B** Counter-clockwise.
- ☐ **C** There is no induced current in the coil.
- ☐ **D** The induced current changes its direction from clockwise to counter-clockwise.
- ☐ **E** The induced current changes its direction from counter-clockwise to clockwise.

16 A current-carrying wire lies on a horizontal table. A circular coil is placed next to the loop. The current vanishes suddenly. What is the direction of the induced current in the coil?



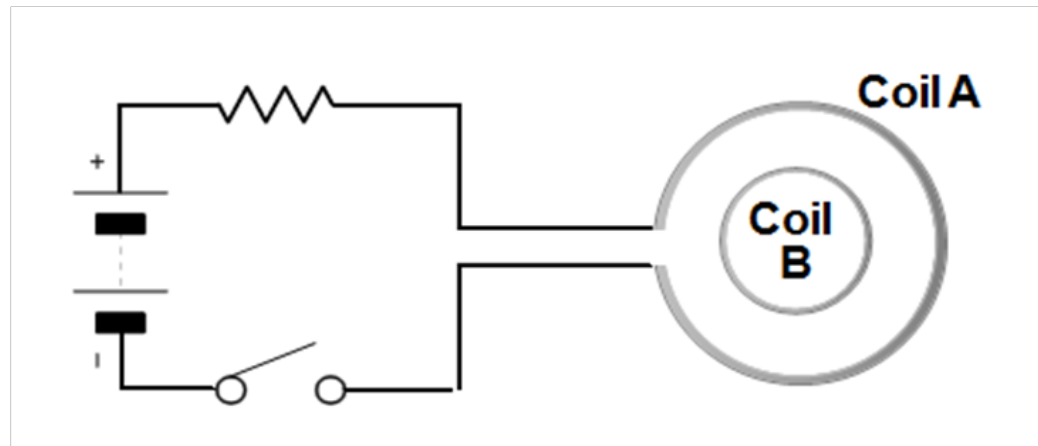
- ☐ **A** Clockwise.
- ☐ **B** Counter-clockwise.
- ☐ **C** There is no induced current in the coil.
- ☐ **D** The induced current changes its direction from clockwise to counter-clockwise.
- ☐ **E** The induced current changes its direction from counter-clockwise to clockwise.

- 17** A rectangular loop of wire is moved at a constant speed from region I to region II and then to region III. Which of the following is true about the magnetic force direction acting on the loop when it crosses the boundary between the regions?



- | | Region I to
Region II | Region II to
Region III |
|--------------------------------|--------------------------|----------------------------|
| <input type="radio"/> A | Left | Right |
| <input type="radio"/> B | Left | Left |
| <input type="radio"/> C | Right | Right |
| <input type="radio"/> D | Right | Left |
| <input type="radio"/> E | Zero | Zero |

- 18** Coil A is connected to a circuit including: a battery, a switch, and a resistor. Coil B lies in the same plane as coil A. What is the direction of the induced current in coil B at the moment when the switch is closed?



- ☐ **A** Clockwise.
- ☐ **B** Counter-clockwise.
- ☐ **C** There is no induced current in the coil.
- ☐ **D** The induced current changes its direction from clockwise to counter-clockwise.
- ☐ **E** The induced current changes its direction from counter-clockwise to clockwise.

