

31-05

Question 951

The square coil shown in figure(12) is 20 cm on a side and has 15 turns of wire on it. It is moving to the right at 2 m/s. Find the induced emf in it at the instant shown, and the direction of the induced current in the coil. (The magnetic field is 0.2 T and its direction is out of the page.)

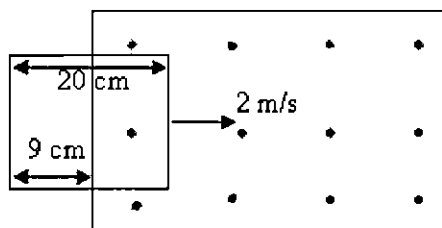


Figure 12

- (a) 1.2 V, clockwise
- (b) 3.6 V, clockwise
- (c) 1.2 V, counter-clockwise
- (d) zero
- (e) 3.6 V, counter-clockwise

Question 952

A metal rod of resistance 12 ohms is forced to move with constant velocity along two parallel metal rails as shown in figure 13. A magnetic field of magnitude 0.35 T is directed as shown in the figure. The separation between the rails is 25.0 cm and the speed of the rod is 45.0 cm/s. What is the current in the rod? Neglect the resistance of the rails.

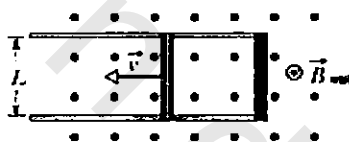


Figure 13

- (a) 1.43 mA counterclockwise
- (b) 3.28 mA clockwise
- (c) 2.32 mA clockwise
- (d) 1.43 mA clockwise
- (e) 3.28 mA counterclockwise

Question 953

Figure 10 shows a bar moving to the right on two conducting rails. To make an induced current in the direction indicated, a constant magnetic field in region A should be in what direction?

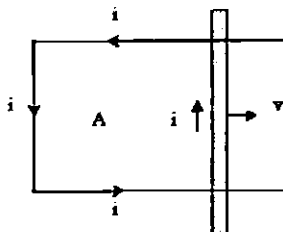


Figure 10

- (a) Out of the page.
- (b) Impossible; this cannot be done with a constant magnetic field.
- (c) Right.
- (d) Into the page.
- (e) Left.