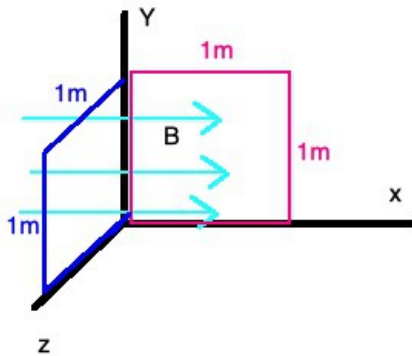


ADVANCED PHYSICS TERM 2 FINAL PRACTICE QUESTIONS



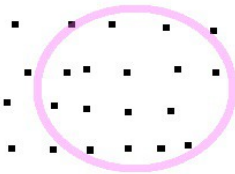
In the diagram above, a uniform constant magnetic field having magnitude 2 T is directed in the + x direction.

Q: What is the flux through the square located in the x y plane?

A: Zero

Q: What is the flux through the square located in the yz plane?

A: 2 Wb



In the diagram above, a magnetic field is directed out of the page and increasing at a rate of 1 T/s. A conducting loop having an area of  $1\text{m}^2$  and a resistance of  $5\ \Omega$  is located in the plane of the page.

Q: What is the direction of the induced current in the loop?

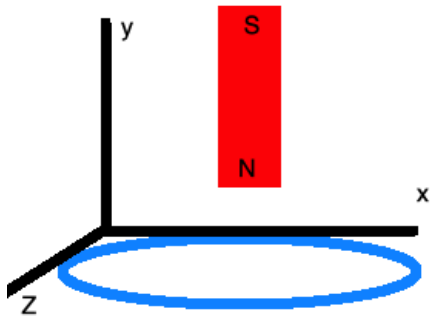
A: Clockwise

Q: What is the induced EMF in the loop?

A: 1 V

Q: What is the induced current in the loop?

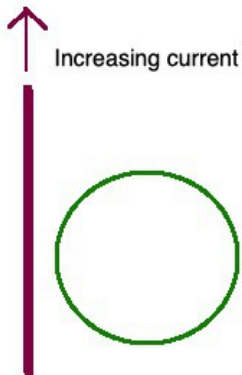
A: .2 A



In the diagram above, a bar magnet is released from rest and falls through a conducting loop in the  $xz$  plane.

Q: As the magnet falls through the loop, describe the flow of current in the loop as viewed from above.

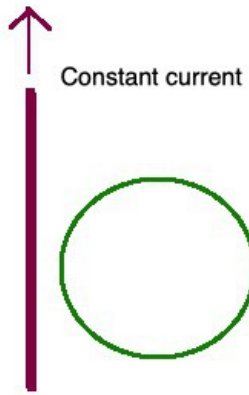
A: First counterclockwise, then clockwise.



In the diagram above, a wire carries an increasing current towards the top of the page. A conducting loop is located near the wire and is in the plane of the page.

Q: What is the direction of the induced current in the loop?

A: Counterclockwise.



In the diagram above, a wire carries a constant current towards the top of the page. A conducting loop is located near the wire and is in the plane of the page.

Q: What is the direction of the induced current in the loop?

A: There is no current induced in the loop.