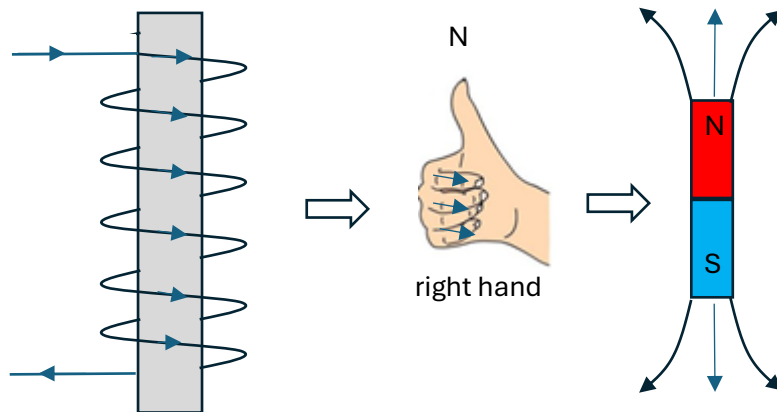


Teacher notes

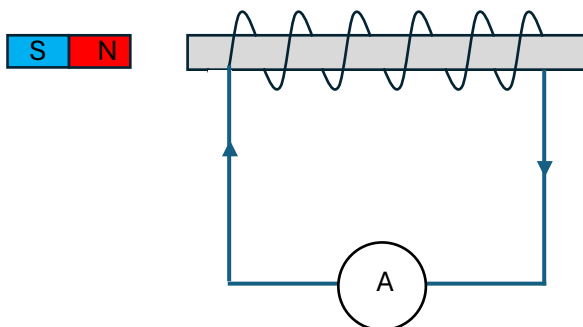
Topic D

Two basic induction questions

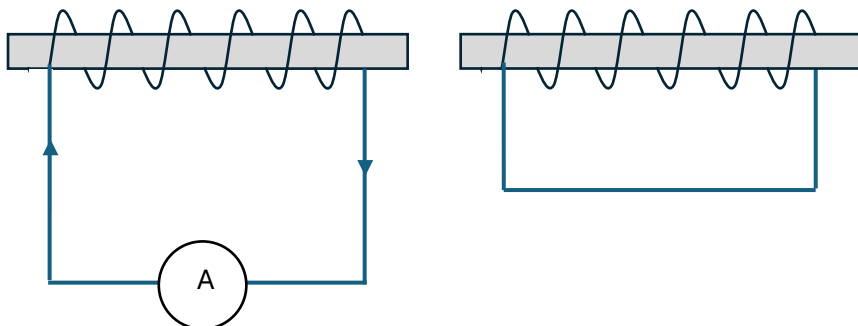
These questions rely on an understanding of how to find the direction of the magnetic field produced by a current in a coil. When the fingers of the right hand curl in the direction of the current the thumb “is the north pole”.



1. A magnet moves near a coil. The direction of the induced current is shown. Is the magnet moving towards or away from the coil?

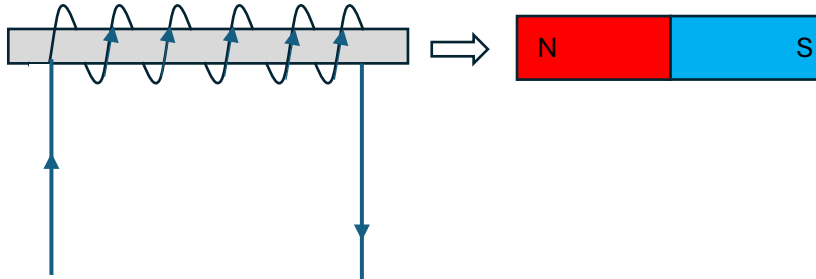


2. The current in the left-hand coil is increasing. What is the direction of the induced current in the right-hand coil?



Answers

1. By the right-hand rule, the coil behaves as the bar magnet shown:

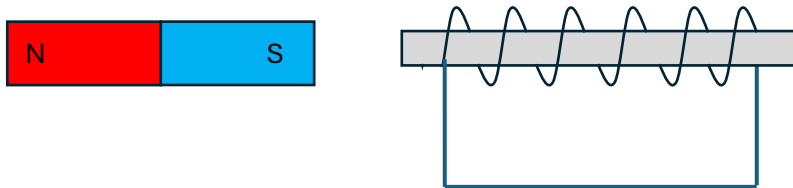


Hence the external bar magnet and the coil repel.

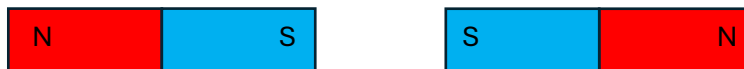


This means that the flux was increasing and so the magnet must have been moving towards the coil.

2. The left-hand coil behaves as the bar magnet shown in question 1.



Since the current was increasing it is as if the left-hand coil is approaching the right-hand coil. There has to be repulsion and so the right-hand coil behaves as the bar magnet shown next:



Hence the current must be as shown below.

