

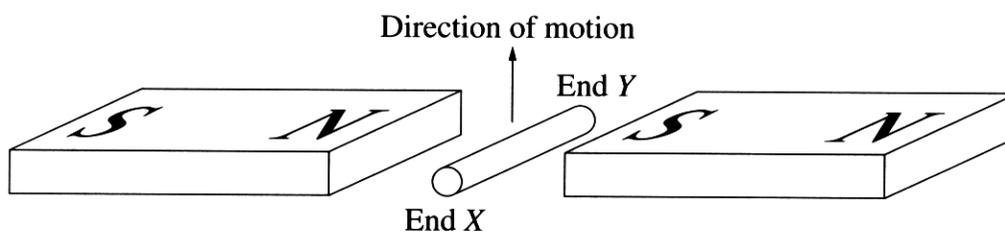
Question 23 (7 marks)

(a) State Lenz's law.

1

An induced emf will produce a current to oppose the change that caused it.

(b) When the metal rod is moved upwards through the magnetic field as shown in the diagram, an emf is induced between the two ends.



(i) Which end of the rod is negative?

1

End X

(ii) Explain how the emf is produced in the rod.

3

when a rod (metal) is put into an external magnetic field current is induced into the rod. This rod will now experience a force (motor effect) using the right-hand push rule you can determine the direction of the current (because you have the force on the rod)

(c) Explain how the principle of induction can be used to heat a conductor.

2

if a conductor is put into a ~~current~~ magnetic field eddy currents will be induced in the conductor. Eddy currents produce heat as they flow \therefore create heat in conductors.