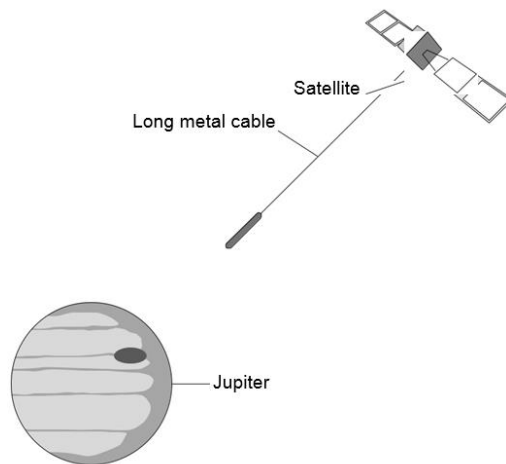


GENERATOR EFFECT 2

Q1 Jupiter has a magnetic field which is more powerful than the magnetic field of any other planet in the Solar System.

Some scientists have suggested that, in the future, a long metal cable could hang from a satellite which orbits Jupiter. The cable would be part of a complete circuit.

This arrangement would produce electricity for the satellite.



(a) (i) What is the name of the effect that would produce electricity for the satellite?

_____ (1 mark)

(a) (ii) Describe how a potential difference is produced across the ends of the metal cable.

(2 marks)

(a) (iii) Why will the potential difference produce an electric current?

(1 mark)

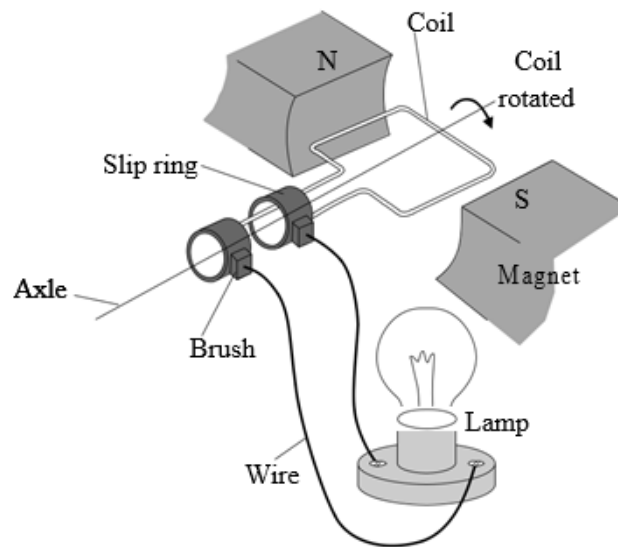
(b) Other satellites in the Solar System could use the same effect to produce electricity in a similar way.

Suggest two reasons why the potential difference produced for another satellite might be smaller than the potential difference for the satellite in the diagram.

(2 marks)

Q2 The diagram shows a generator.

When the coil is rotated around the axle, a current is produced and the lamp lights up.



(a) Explain the purpose of the slip rings and brushes.

(2 marks)

(b) Explain how this generator gives an a.c. rather than a d.c. output.

(2 marks)

(c) In this design, the generator effect occurs because the coil rotates in a magnetic field. How else can a generator effect occur?

(1 mark)

Total: 11 marks