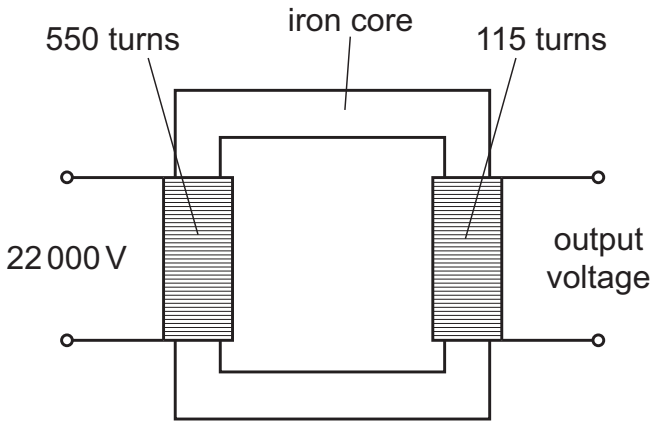
**32** A 24 V power supply and a 100% efficient transformer are used to light a 6.0 V, 12 W lamp.

What is the current in the power supply?

**A** 0.50 A **B** 2.0 A **C** 3.0 A **D** 8.0 A



**25** The diagram shows a transformer.




What is the output voltage?

**A** 0.35 V **B** 2.9 V **C** 4600 V **D** 105 000 V

**8** **(a)** Fig. 8.1 shows a wire carrying a large current.

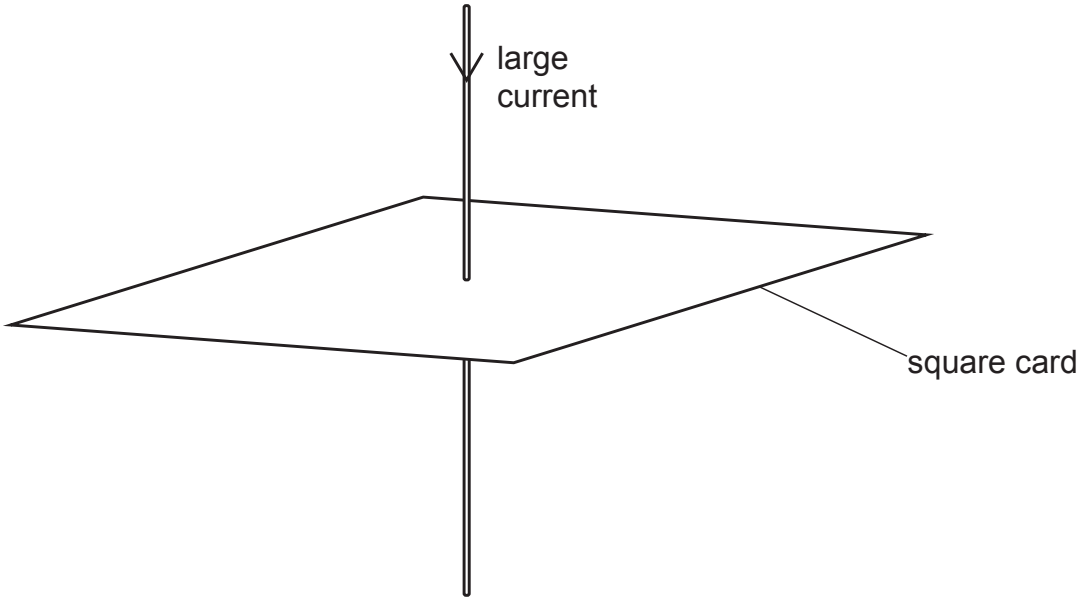



**Fig. 8.1**

**(i)** Fig. 8.2 shows the square card viewed from above.

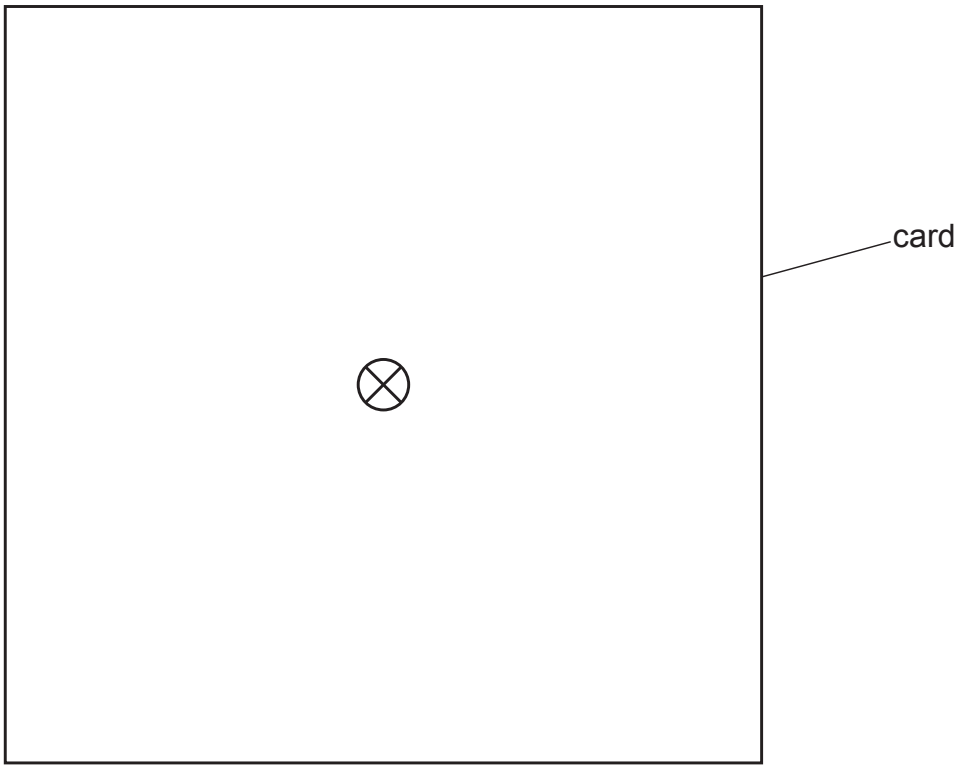



**Fig. 8.2**

On Fig. 8.2, draw **three** magnetic field lines that indicate the direction of the magnetic field and how its strength varies with distance from the wire. [3]

**(ii)** The current in the wire increases and the direction of the current is reversed.

State how these changes affect the magnetic field.

.....

(2)

[2]

**(b)** Electricity is transmitted at high voltage.

Explain why a high voltage increases the efficiency of transmission even with thinner wires.

.....

.....

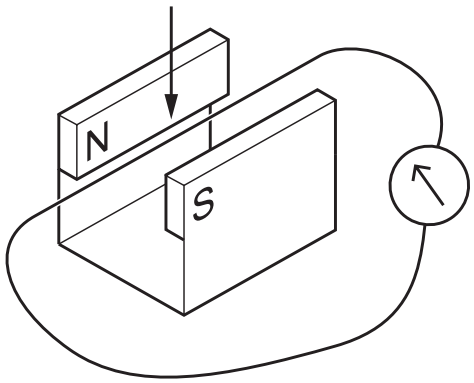
.....

..... [3]

[Total: 8]



**30** A wire is moved down in a direction perpendicular to the magnetic field.




Three changes are suggested.

1 The speed of the movement of the wire is increased.

2 The magnetic field strength is decreased.

3 The direction of the magnetic field is reversed.

Which changes increase the electromotive force (e.m.f.) induced in the wire?

**A** 1 and 3 **B** 1 only **C** 2 and 3 **D** 3 only

**8** Fig. 8.1 shows a horizontal, flat coil in a magnetic field

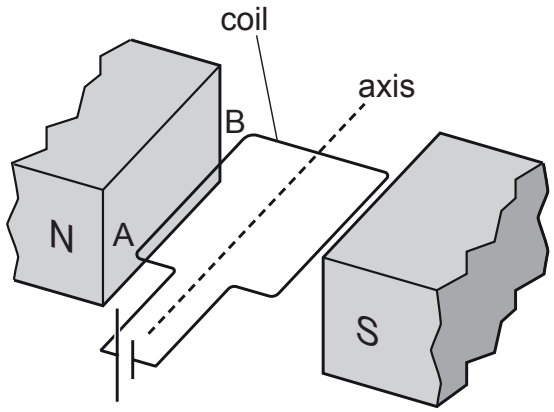



**Fig. 8.1**

The coil is connected to a cell. The coil rotates.

**(a)** Determine the direction of movement of the side AB relative to the plane of the coil.

direction of movement = ..... [1]

**(b)** Explain how you determined the direction in **(a)**.

.....

.....

..... [2]

**(c)** State and explain what happens to the coil as it reaches the vertical position.

.....

.....

.....

..... [2]

**(d)** To operate as a motor, a split-ring commutator and brushes are added to the parts shown in Fig. 8.1.

Explain the effects of the split-ring commutator and the brushes on the action of the motor.

.....

.....

..... [3]

[Total: 8]