6 This question is about electromagnetism.

(a) Diagram 1 shows the construction of an electromagnet.

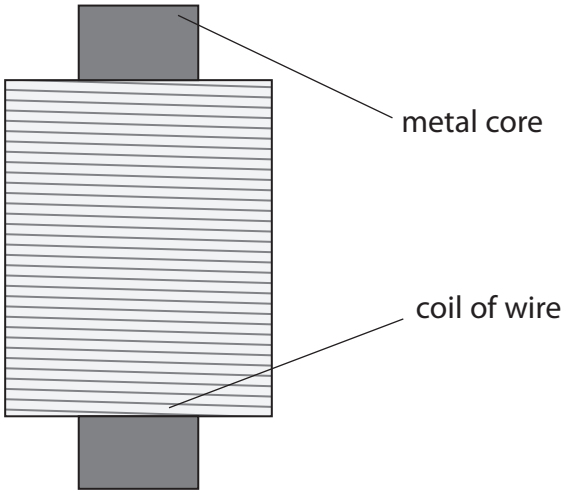

Diagram 1

(i) Name a suitable metal for the core.

(1)

.....

(ii) State what must be done to the coil of wire to produce a magnetic field.

(1)

.....

.....

(b) Electromagnets are used in transformers to change the size of a voltage.

Diagram 2 shows the construction of a simple transformer.

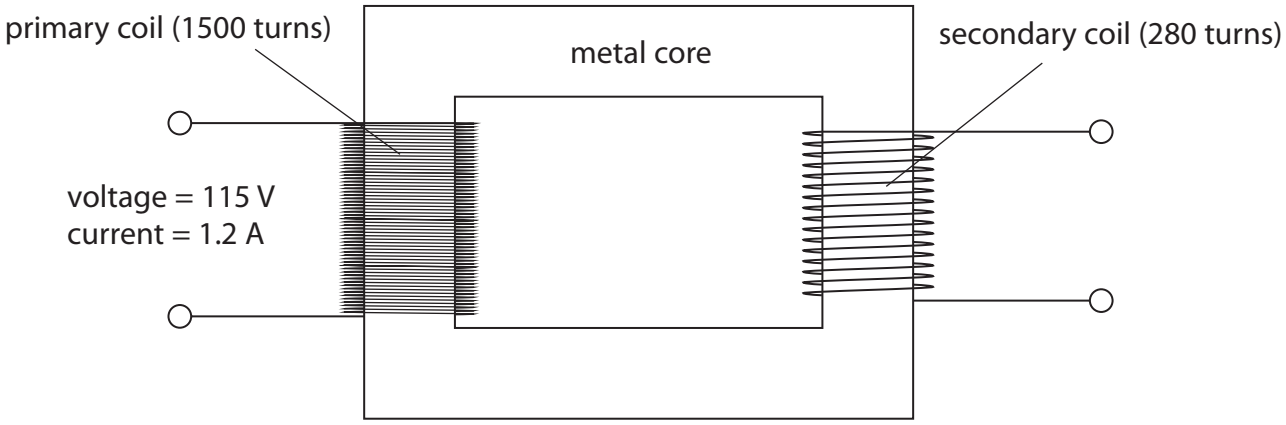

Diagram 2

(i) State the formula linking the input (primary) voltage, output (secondary) voltage and the turns ratio for a transformer.

(1)

(ii) The input voltage to the transformer is 115 V.

Show that the output voltage is approximately 20 V.

(3)

(iii) The input current to the transformer is 1.2 A.

Calculate the output current.

Assume that the transformer is 100% efficient.

(3)

output current = ... A

(iv) State two factors that would increase the output current of the transformer.

(2)

1 .....

.....

2 .....

.....

(Total for Question 6 = 11 marks)