7 The diagram shows a transformer that is 100% efficient.

primary coil
1200 turns

secondary coil

alternating
supply,
2A, 230 V

to load

V   output voltage
110 V

to load

iron core
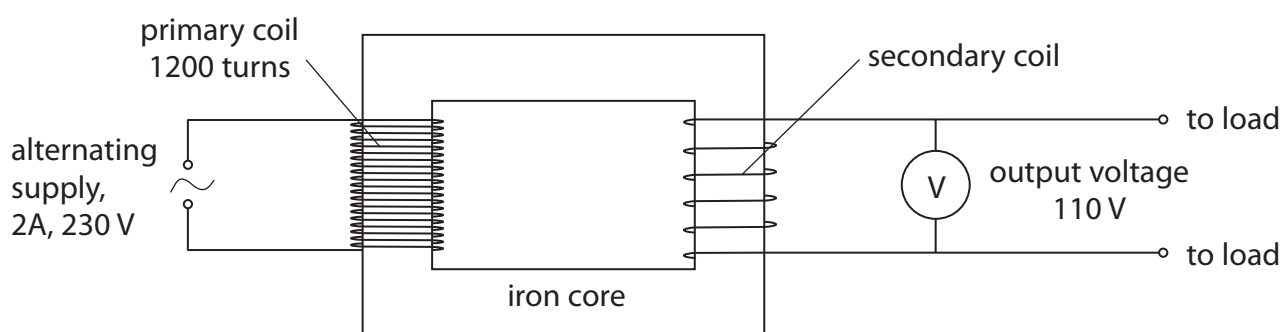
(a) (i) State the equation linking input power and output power for the transformer.

(1)

(ii) Calculate the output current of the transformer.

(2)

output current = ... A

(b) (i) State the equation linking input voltage, output voltage and turns ratio for the transformer.

(1)

(ii) Calculate the number of turns on the secondary coil of the transformer.

(2)

number of turns = ...

(c) Explain how a transformer works.

In your answer, you should include the reasons for using

- two coils

- an iron core

- an alternating supply

(5)

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(Total for Question 7 = 11 marks)