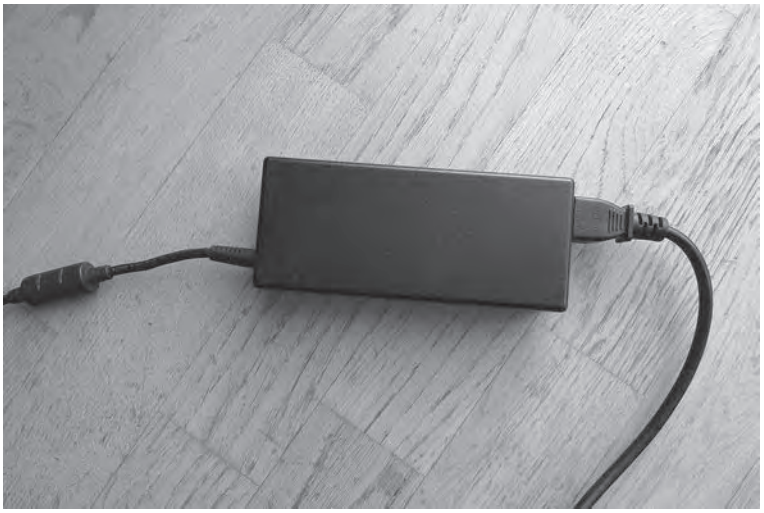
7 A laptop battery charger contains a step-down transformer.



(a) The number of turns on the primary coil of a step-down transformer is

(1)

- ☒ **A** the same as the number of secondary turns
- ☒ **B** more than the number of secondary turns
- ☒ **C** less than the number of secondary turns
- ☒ **D** zero

(b) This transformer is designed to reduce the voltage from 230 V to 12 V.

The primary current is 0.25 A.

(i) State the equation linking primary voltage, primary current, secondary voltage and secondary current for a transformer.

(1)

(ii) Calculate the secondary current, assuming that the transformer is 100% efficient.

(2)

Secondary current = ... A

(c) A student notices that the charger becomes warm when it is working.

Suggest how this will affect the output of the transformer.

(2)

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(Total for Question 7 = 6 marks)