7 The photograph shows an electrical appliance plug containing a step-down transformer.

(a) Compare the number of turns on the primary coil of a step-down transformer with the number of turns on its secondary coil.

(1)

.....

.....

(b) This transformer is designed to reduce the voltage from 230 V to 5.5 V.

The secondary current is 1.0 A.

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

(1)

(ii) Calculate the primary current in the transformer.

[assume the transformer is 100% efficient]

(2)

primary current = ... A

(c) A student notices that the electrical applicance plug becomes warm when the appliance is working.

Suggest how this will affect the input to the transformer.

[secondary voltage and secondary current do not change]

(2)

(Total for Question 7 = 6 marks)