6 A lamp has a value of 100 W and 240 V marked on it.

(a) Explain what is meant by “100 W and 240 V” when applied to the lamp.

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..... [1]

(b) Calculate the number of electrons that enter and leave the filament of the lamp every second when a D.C. supply of 280 V is connected across the filament.

number of electrons per second =..... s^{-1} [2]

(c) Explain in terms of the movement of charged particles whether the resistance of the electric filament lamp changes when connected to an external power supply for 30 minutes.

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..... [2]