



- 8 (a) The charge on an electron is $-1.60 \times 10^{-19} \text{ C}$. Calculate the number of electrons per second that pass any point in a wire that is carrying a current of 4.0 A .

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

- (b) Calculate the resistance of a length of 240 m of copper wire of diameter 0.376 mm . The resistivity ρ of copper is $1.70 \times 10^{-8} \Omega \text{ m}$.

resistance = Ω [3]





- (c) A battery of e.m.f. 9.0 V has an internal resistance of $2.2\ \Omega$. It is connected in the circuit shown in Fig. 8.1.

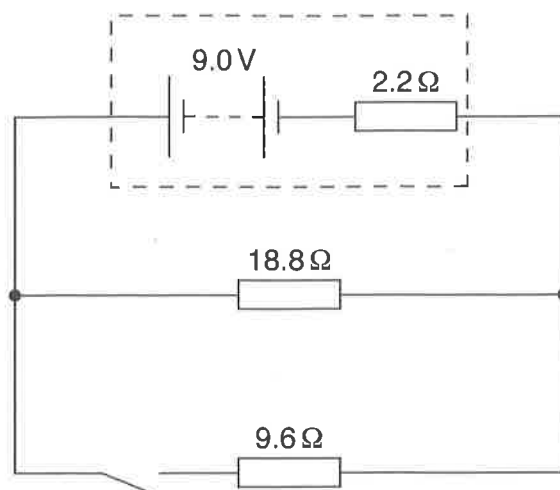


Fig. 8.1

- (i) The switch is open. Calculate

- the potential difference across the $18.8\ \Omega$ resistor,

potential difference = V [3]

- the power supplied to the $18.8\ \Omega$ resistor.

power = W [2]

- reduction in power = W [6]

- [4]



DO NOT WRITE IN THIS MARGIN



BLANK PAGE



DO NOT WRITE IN THIS MARGIN





BLANK PAGE

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.