Q1.

The circuit in Figure 1 is switched on.

A charge of 1.2 C leaves the battery in a time of 4.0 s.

Calculate the current in the circuit.

Use the equation

$$\text{current} = \frac{\text{charge}}{\text{time}}$$

current = ... A

(Total for question = 2 marks)

Q2.

A wire in a circuit carries a current of 0.9 A.
Calculate the quantity of charge that flows through the wire in 50 s.

State the unit of charge with your answer.

Use the equation

charge = current × time

(3)

quantity of charge = ... unit ....

(Total for question = 3 marks)

Q3.

Answer the question with a cross in the box you think is correct (☒). If you change your mind about an answer, put a line through the box (☒) and then mark your new answer with a cross (☒).

Which of these equations is correct?

(1)

☒   **A**   time $= \dfrac{\text{charge}}{\text{current}}$

☒   **B**   time = charge × current

☒   **C**   time $= \dfrac{\text{power}}{\text{energy}}$

☒   **D**   time = power × energy

(Total for question = 1 mark)

Q4.

A torch has a battery and a bulb.

The current in its circuit is 0.08 A.

Calculate the amount of charge passing a point in this circuit in 2 minutes.

(3)

charge = ... coulombs

(Total for question = 2 marks)

Q5.

A battery sends a current through a metal wire.
The current in a wire is 3.7 A.
Calculate the charge that flows into the wire in 13 s.

(2)

....

(Total for question = 2 marks)

Q6.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

This question is about electrical circuits.

Figure 1 shows a lamp in a circuit.
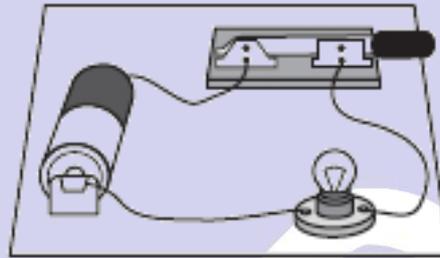
The lamp is switched on.

Figure 1

(i)   The current in the lamp is a flow of

(1)

☒ **A**   atoms

☒ **B**   electrons

☒ **C**   neutrons

☒ **D**   protons

(ii)   The current in the lamp is 0.21 A.

Calculate the charge that flows through the lamp in a time of 300 s.
State the unit of charge.
Use the equation

$$\text{charge} = \text{current} \times \text{time}$$

(3)

charge = ... unit ....

(Total for question = 4 marks)

Q7.

Answer the question with a cross in the box you think is correct ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

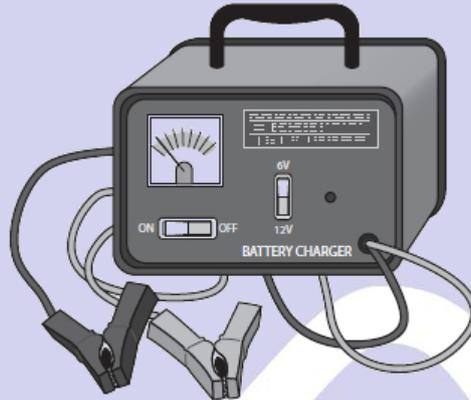Figure 2 shows a charger for a car battery.

Figure 2

(i)   The meter on the battery charger shows the current supplied to a battery.

The meter on the battery charger is

(1)

☒ **A**   an ammeter
☒ **B**   an ohmmeter
☒ **C**   a voltmeter
☒ **D**   a wattmeter

(ii)   The battery charger supplies a steady current of 2.5 A to the battery.

Calculate the charge flowing to the battery in 8 minutes.
Use the equation

charge = current × time

(2)

charge = ... C

(Total for question = 3 marks)

Q8.

(i) There is a current of 0.46 A in a lamp.

Calculate the total charge that flows through the lamp in 30 seconds.
Use the equation

charge = current × time in seconds

(2)

charge = ... C

(Total for question = 2 marks)

Q9.

A lamp is connected to a potential difference of 0.24 V.

The current in the lamp is 0.12 A.

The current in the lamp stays at 0.13 A.

Calculate the charge that flows through the lamp in 35 s.
Use the equation
$Q = I \times t$

(2)

charge = ... C

(Total for question = 6 marks)

Q10.

A resistor is connected to a power supply.

(ii)   The resistor remains connected for a period of time.

The current in the resistor is 200 mA.
A total charge of 42 C flows through the resistor.
Calculate, in minutes, the time taken for this amount of charge to flow through the resistor.

(3)

time = ... minutes

(Total for question = 3 marks)