

Electrical Voltage (V), energy (E) and electrical charge (Q) calculations.

[Total 12 marks]

Complete the questions and calculations below. To receive full marks you must show clear steps in your working and include the correct final units where appropriate.

1. In a remote control two AA 1.5 Volt cells are connected in series.
 - a) What is the total voltage (or potential difference) provided by this battery of cells? (3V) [2]
 - b) How much energy would each Coulomb of charge carry from the battery? (3J) [2]

2. Six 2 Volt cells are connected in series and used as a car battery.
 - a) What is the total voltage (or potential difference) provided by this battery of cells? (12V) [2]
 - b) How much energy would 2 coulombs of charge gain on passing through all six cells(24J) [2]
 - c) How much charge would be required to carry 3 joules of energy from the cell? ? (4C) [2]

3. A smartphone has a rechargeable (secondary) cell with a voltage of 4.8 Volts.
When talking on the phone a charge of 200 mC per second flows from the battery.
How much energy is being carried by this charge every second? (0.96J) [2]