



Mark scheme – Static and Charge (F)

Question			Answer/Indicative content	Marks	Guidance
1			D ✓	1 (AO2.1)	<p><u>Examiner's Comments</u></p> <p>About two-thirds of the candidates got this question correct: the commonest wrong answer here was A, presumably looking at the symmetry in the bottom part of the diagram.</p>
			Total	1	
2			A ✓	1(AO1.1)	
			Total	1	
3			A	1 (AO2.1)	
			Total	1	
4			C ✓	1(AO1.1)	<p><u>Examiner's Comments</u></p> <p>The term 'source' was not clearly understood by some candidates. In this context a 'source of potential difference' is 'something which will give a voltage that pushes the flow of charge around the circuit.'</p>
			Total	1	
5		i	<p>Error: only positive charges can move ✓</p> <p>Correction: negative charges/electrons can move ✓</p>	2 (AO3.2a) (AO1.2)	<p>ALLOW indication on the student's notebook</p> <p><u>Examiner's Comments</u></p>  <p>A number of candidates provided the correct answer (that it is electrons that move) but did not identify that mistake in the student's homework (i.e. only positive charges can move). The two most common ways that candidates identified the student's mistake were: by putting a cross next to it on the homework sheet, or by writing that statement 4 was wrong in their answer. Over a third of candidates omitted to identify the student's mistake in their answer (see Exemplar 1 below). Candidates were instructed to do this in the stem of the question and identifying the error was the marking point for the first mark.</p>  <p>AfL</p>

					<p>Underlining the command words can ensure that candidates answer the question that is being asked. In this example both 'identify' and 'correct' needed to be answered for both marks. Relying on the reader to assume that what the mistake is from the answer provided is testing the reader's knowledge and understanding not that of the candidate.</p> <p>Exemplar 1</p> <p>Identify the student's mistake and correct it.</p> <p><input type="checkbox"/> Negative charges can move as well ✓</p> <p>.....</p> <p>..... [2]</p> <p>Exemplar 2</p> <p>Identify the student's mistake and correct it.</p> <p>..... not only positive charges have the ability to move ✓</p> <p>..... a negative charge is able to move. ✓</p> <p>..... [2]</p>
		ii	4A ✓	1 (AO1.2)	<p>Examiner's Comments</p> <p>Half of all candidates did know that the current must be the same both sides of the bulb. The most common misconception was attempts to calculate and answer using the data on the circuit diagram.</p>
			Total	3	
6			<p>FIRST CHECK THE ANSWER ON ANSWER LINE</p> <p>If answer = 75 (C) award 3 marks</p> <p>Charge flow = current × time / $Q = It$ ✓</p> <p>$Q = 2.5 \times 30$ ✓</p> <p>$Q = 75$ (C) ✓</p>	3 (AO1.2) (AO2.1) (AO2.1)	<p>Mp1 can be assumed if correct substitution follows</p> <p>No ECF from incorrect equation</p> <p>Examiner's Comments</p> <p>Although the concept of electrical charge is difficult for many GCSE candidates, and they were required to recall the equation the majority of candidates were credited with full marks here.</p>
			Total	3	
7	a	i	(Ruler has) equal numbers of protons and electrons / OR A ✓	2 (AO2 x 1.1)	<p>ALLOW equal numbers of positive and negative charges/opposite charges / OR A</p> <p>ALLOW ruler has not lost/gained electrons /</p>

			So (effects of positive charges and negative charges) cancel out / AW / ORA ✓		ORA ALLOW ruler is / atoms are neutral unless they lose/gain electrons / ORA ALLOW if the ruler had been charged, movement of electrons (to/from the air) would discharge it ALLOW overall/net charge is zero/neutral / ORA IGNORE just charge is neutral
		ii	Electrons are transferred (from/to the ruler or from/to the cloth) / ORA ✓ And any one from: Charges are no longer equal / AW ✓ Different numbers of protons and electrons / AW ✓ Effects no longer cancel out / AW ✓	2 (AO2 x 1.1)	ALLOW electrons are lost/gained DO NOT ALLOW protons/positive charges move ALLOW ruler becomes negative/positive with correct movement of electrons ✓✓
b	i		They must be opposite/unlike charges / one is positive and one is negative / one is a proton and one is an electron ✓ And any two from: They are being attracted ✓ The arrows show a force on the positive (charge)/(charge) B ✓ Forces / field (lines) go from positive to negative ✓ (Charge) A is negative AND (charge) B is positive ✓	3 (AO3 x 1.2)	ALLOW A is positive and B is negative for this mark only ALLOW forces / field (lines) go from B to A ALLOW maximum of 1 mark if described as positive and negative poles
		ii	Any one from: North and South (poles) (replace positive and negative charges) ✓ The arrows/field lines go from North to South (as opposed to positive to negative) ✓ They have similar shape field (patterns) ✓ Closeness of field lines represents strength of field (in each case) ✓ Opposite <u>poles</u> (and opposite charges) attract ✓ Both show direction of field (lines) / forces ✓	1 (AO1.1)	

			Total	8	
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