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EDEXCEL GCSE PHYSICS: QUESTIONS BY TOPIC

Static Electricity (11)

GCSE Physics (Foundation) Topic 11

7 questions · 75 marks · Mark schemes included

Pearson Edexcel GCSE (9-1) Physics 1PH0, Foundation Tier, June 2018 - June 2025

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HOW TO USE THIS BOOKLET

Questions run from the lowest mark tariff to the highest, so similar questions sit together.

Click any row below to jump straight to that question.

On every question page, click ANSWER in the top-right corner to jump to its mark scheme.

Diagrams, graphs, tables and data are printed exactly as they appeared in the original papers.

QUESTION	SOURCE	MARKS	PAGE
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2. Q3	Paper 2 June 2024	8	8
3. Q10	Paper 2 June 2018	11	12
4. Q10	Paper 2 November 2020	11	16
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QUESTIONS

7 questions · 75 marks · lowest tariff first



8-MARK QUESTIONS

2 questions in this booklet



1 This question is about static electricity.

(a) Figure 1 shows a plastic comb picking up small pieces of paper.



Figure 1

The comb picks up the paper because the comb has extra

(1)

- ☐ A magnetism
- ☐ B charge
- ☐ C resistance
- ☐ D weight

(b) Figure 2 shows a person touching a charged dome.

The person's hair is standing on end.



Figure 2

(i) Explain how electric charge causes the hair to spread out, as shown in Figure 2.

(2)

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(ii) The person lets go of the charged dome.

The charge on the person's hair is $10\mu\text{C}$.

The charge on the dome is $25\mu\text{C}$.

Calculate the percentage of charge on the hair compared with on the dome.

Use the equation

$$\text{percentage of charge on the hair} = \frac{\text{charge on hair}}{\text{charge on dome}} \times 100 \quad (2)$$

percentage of charge on the hair = ...%



(c) Draw **one** straight line from each example of electrostatic charges in action to their descriptions.

(3)

electrostatic charges in action

description

charging a plastic comb

small droplets are charged so they will stick to an object

electrostatic paint spraying

build-up of charge in a cloud causes a discharge to Earth

safe fuelling of cars by earthing

prevents a dangerous build-up of charge between a flowing liquid and a pipe

lightning

produced by friction between solid surfaces

(Total for Question 1 = 8 marks)



3 A student rubs **two** balloons with a dry cloth.

The balloons become positively charged.

The student hangs the charged balloons using strings, as shown in Figure 5.

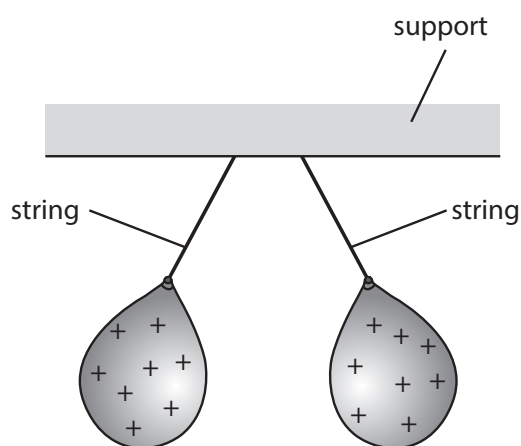


Figure 5

(a) Use words from the box to complete the sentences.

(4)

ampere	attract	coulomb	electrons
negative	positive	protons	repel

The balloons have the same charge.

This means that these balloons each other.

The charged particles transferred from the balloons to the cloth are

called

The cloth is left with a charge.

The unit of charge is the

- (b) One of the charged balloons is moved so it nearly touches a wall, as shown in Figure 6.

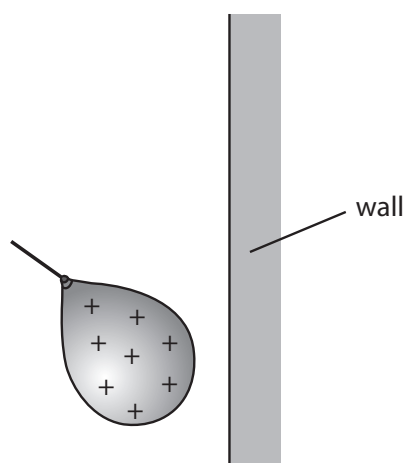


Figure 6

The balloon then sticks to the wall.

Explain why the balloon sticks to the wall.

You may add to the diagram to help your answer.

(2)

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(c) Figure 7 shows a positively charged metal sphere above the ground.

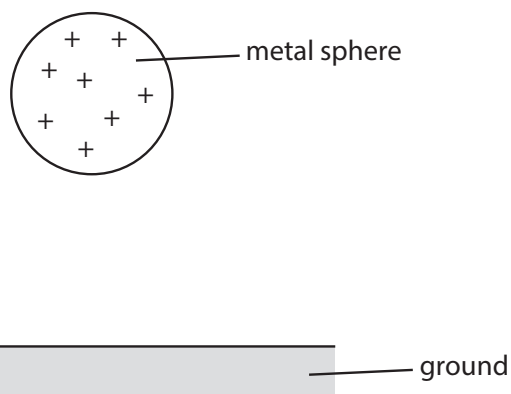


Figure 7

The metal sphere can be discharged by connecting the sphere to the ground with a metal wire.

Explain how this would discharge the sphere.

(2)

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(Total for Question 3 = 8 marks)

11-MARK QUESTIONS

3 questions in this booklet



- 10** (a) A student rubs a plastic comb with a dry cloth to give the comb a positive electric charge.

Figure 19 shows the charged plastic comb picking up small pieces of paper.



(Source © GIPhotoStock/SCIENCE PHOTO LIBRARY)

Figure 19

- (i) Explain how rubbing the comb with a dry cloth gives the comb a positive electric charge.

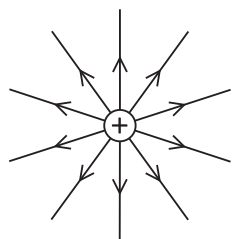
(3)

- (ii) Explain how the positively-charged plastic comb picks up the small pieces of paper.

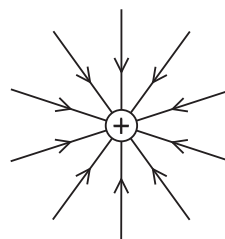
(3)

(b) Which of these diagrams shows the shape and direction of the electric field around a positive point charge?

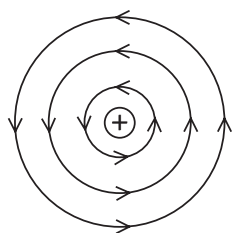
(1)



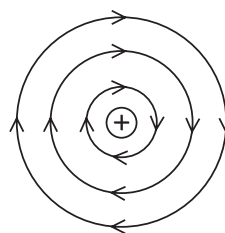
☐ A



☐ B



☐ C



☐ D

(c) Figure 20 shows two metal spheres.

Metal sphere A is fixed to a table.

Metal sphere B can be moved.

Metal sphere B is placed at a short distance from metal sphere A.

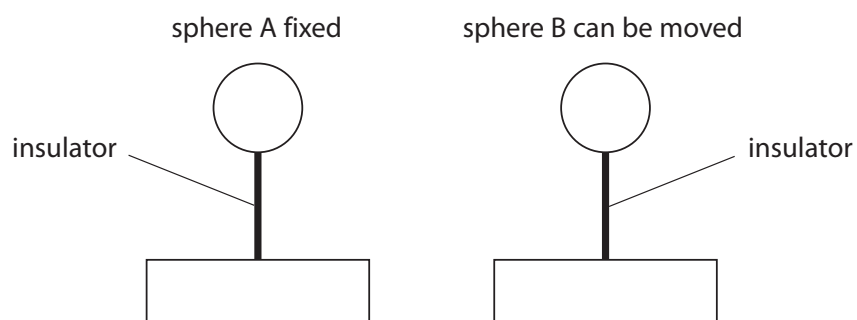


Figure 20

Both spheres are insulated from the table and given a negative charge.

The force between the charged spheres is measured.

(i) Explain, in terms of electric fields, why a force is exerted on sphere B.

(2)

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- (ii) Sphere B is moved and the force between the spheres is measured at several different distances.

Figure 21 is a graph of force on sphere B against distance between the centres of the spheres.

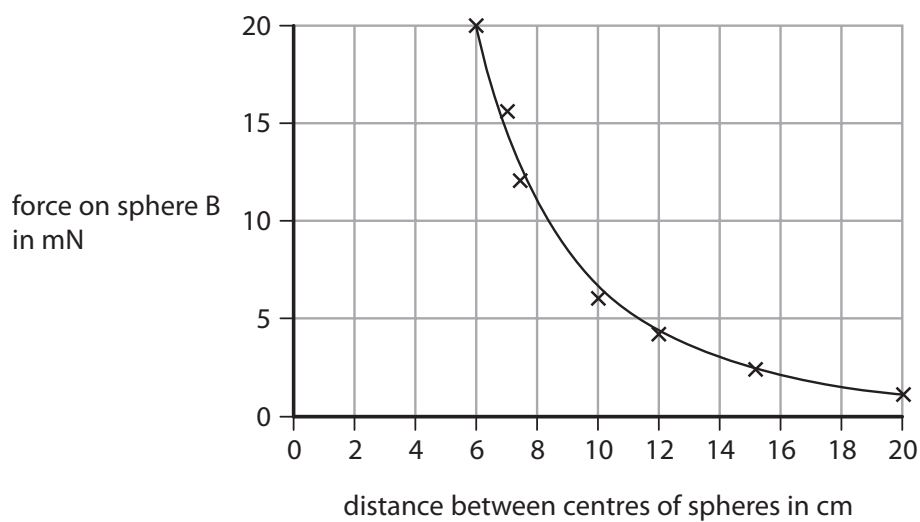


Figure 21

Describe how the force on sphere B varies with the distance between the centres of the spheres.

(2)

(Total for Question 10 = 11 marks)

10 This question is about static electricity.

(a) A student has a rubber balloon tied to a long piece of cotton thread.

The student gives the balloon an overall electrostatic charge.

(i) Describe **one** way that the student could give the balloon an overall electrostatic charge.

(2)

(ii) The student gives the balloon an overall negative charge.

Which of these sentences explains why the overall charge on the balloon is negative?

(1)

- ☐ **A** Negative charge has been removed from the balloon.
- ☐ **B** Negative charge has been added to the balloon.
- ☐ **C** Positive charge has been removed from the balloon.
- ☐ **D** Positive charge has been added to the balloon.

(iii) The student charges another balloon on a long thread.

Explain how the student can show that the two balloons have the same type of charge.

(3)



(b) Figure 26 shows a plastic block and a metal disc with an insulating handle.

The top surface of the plastic block has a negative charge.

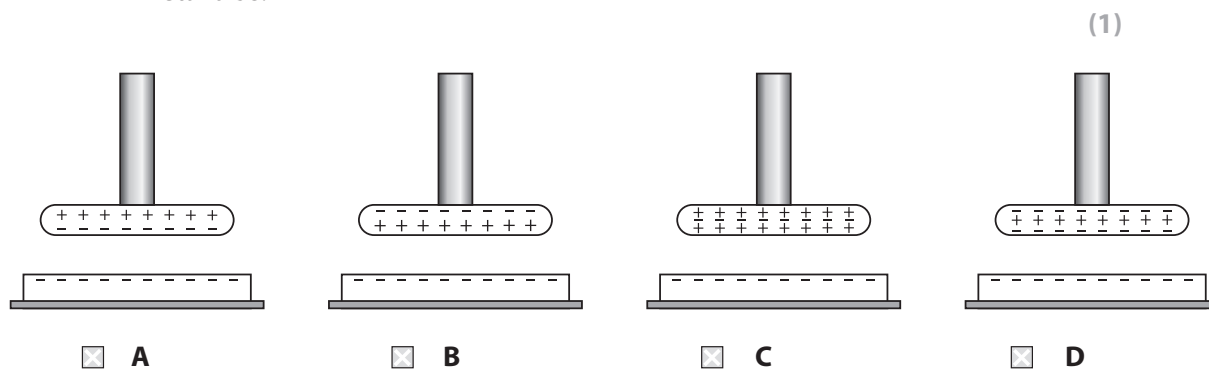
The metal disc has no overall electric charge.



Figure 26

A student uses the insulating handle to hold the metal disc above the plastic block.

(i) Which of these diagrams shows how the charge is distributed on the metal disc?



(ii) The student keeps holding the metal disc above the charged plastic block and taps the metal disc with a finger.

This earths the metal disc for a short time.

Explain why the disc now has an overall positive charge.

(2)

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(iii) Figure 27 shows the charges on part of the metal disc and the plastic block.

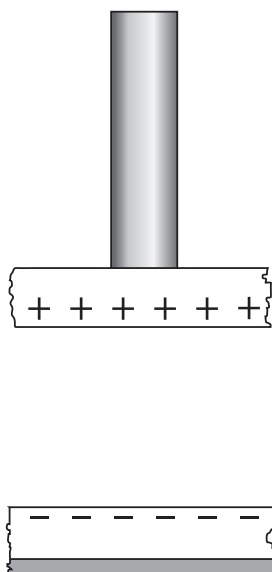


Figure 27

On Figure 27, draw lines to show the shape and direction of the electric field between the metal disc and the plastic block.

(2)

(Total for Question 10 = 11 marks)

10 (a) Figure 19 shows **two** metal plates.

The plates are charged by a very high voltage (potential difference).

Draw, on Figure 19, the shape and direction of the electric field between the two plates.

(2)

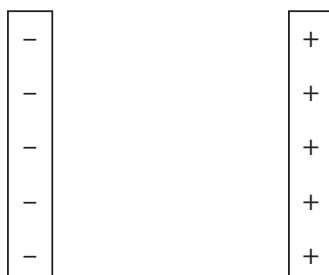


Figure 19

(b) Figure 20 shows a device that removes small particles of soot from sooty air.

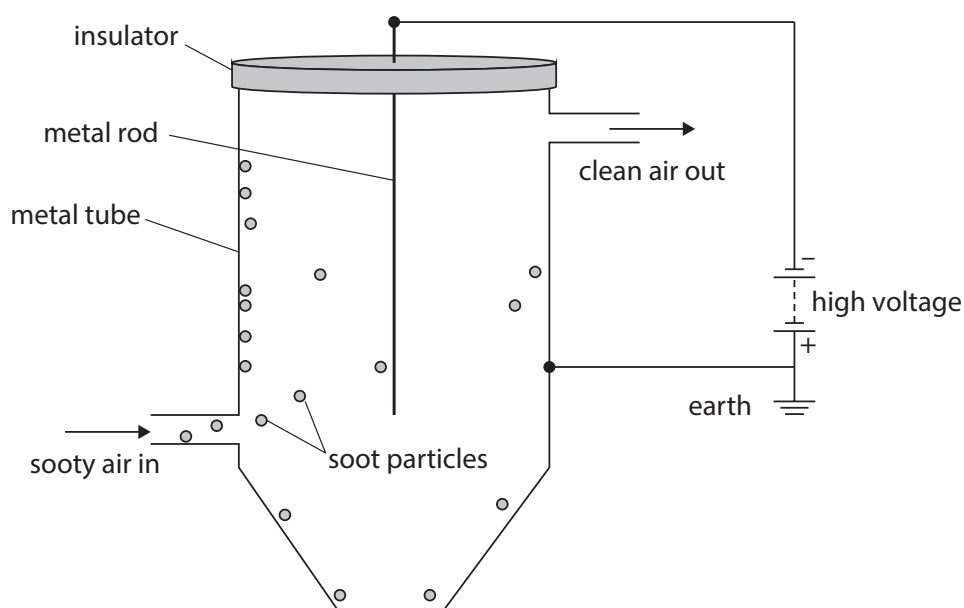


Figure 20

- (i) There is a large potential difference between the metal tube and the metal rod in the centre of the tube.

This large potential difference causes the soot particles to gain a negative charge as they pass between the rod and the tube.

The soot particles have

(1)

- ☐ A lost protons
- ☐ B lost electrons
- ☐ C gained protons
- ☐ D gained electrons

- (ii) Explain why, in Figure 20, the charged soot particles move towards the metal tube.

(2)

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- (iii) When the soot particles reach the metal tube, the charge on them changes.

State how the charge on them changes.

(1)

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- (iv) The metal tube does not become charged when the soot particles reach it.

Explain why the metal tube does not become charged.

(2)

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(c) There is a current of 2.5 mA in a circuit.

Calculate the amount of charge that moves past a point in the circuit in 80 seconds.

State the unit of charge.

(3)

charge = ... unit

(Total for Question 10 = 11 marks)



13-MARK QUESTIONS

2 questions in this booklet



- 7 (a) Figure 13 shows a negatively charged metal sphere, M.

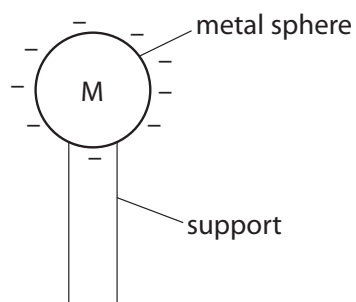


Figure 13

- (i) Sphere M is negatively charged because it has

(1)

- ☐ **A** gained electrons
- ☐ **B** lost electrons
- ☐ **C** gained protons
- ☐ **D** lost protons

(ii) A metal sphere, N, is connected to earth by a wire.

N is moved near to M as shown in Figure 14.

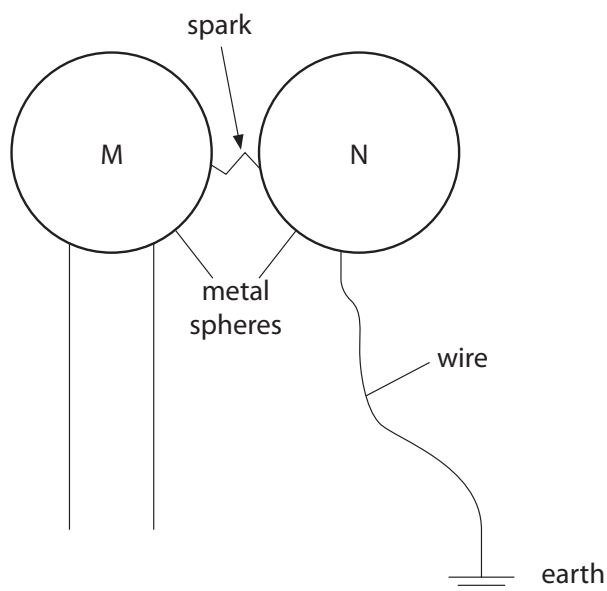


Figure 14

A spark jumps between the spheres, discharging sphere M.

Describe what happens in the wire connecting sphere N to earth when the spark jumps between M and N.

(2)

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(iii) Describe a use of earthing in everyday life.

Your answer should state the use and describe why earthing is needed.

(2)

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(b) Figure 15 shows two parallel metal plates.

The plates are charged using a very high voltage.

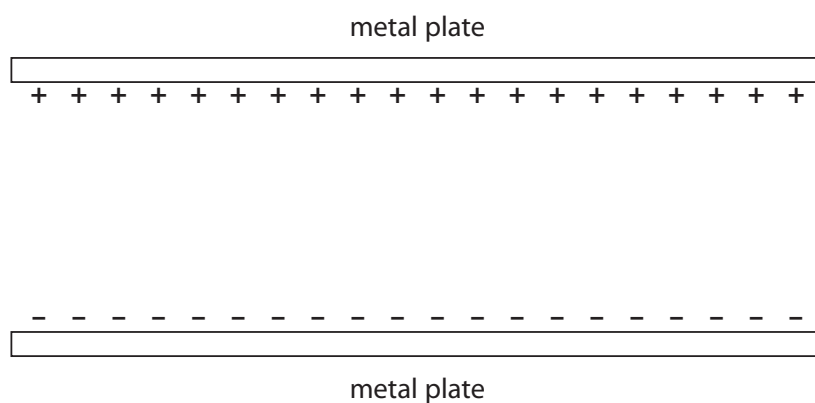


Figure 15

Draw on Figure 15 the shape and direction of the electric field **between** the plates.

(2)



*(c) This question is about electrostatic charges and the forces between them.

Figure 16 shows some apparatus that can be used to show that like charges repel and unlike charges attract.

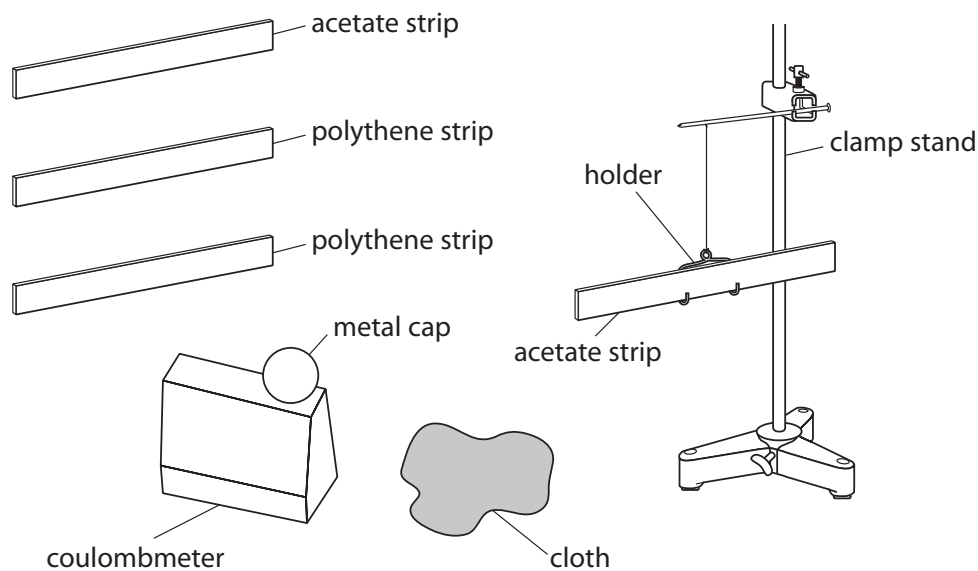


Figure 16

An acetate strip can be charged positively.

A polythene strip can be charged negatively.

A coulombmeter can be used to measure charge and whether the charge is positive or negative.

Explain how you would use the apparatus in Figure 16 to show that like charges repel and unlike charges attract.

(6)

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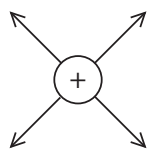
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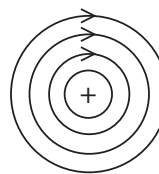
(Total for Question 7 = 13 marks)

7 (a) Which of the following shows the electric field around a point charge?

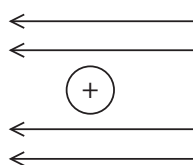
(1)



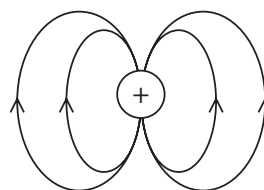
☐ A



☐ B



☐ C



☐ D

(b) State **one** way of giving a plastic rod a static electric charge.

(1)

(c) A cleaning company uses an electric sprayer to produce a cloud of disinfectant inside a bus.

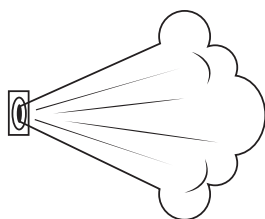
The sprayer gives a negative electric charge to each droplet in the cloud of disinfectant.

(i) The droplets in the cloud of disinfectant have a negative charge because the sprayer

(1)

- ☐ A adds electrons to the droplets
- ☐ B adds protons to the droplets
- ☐ C removes electrons from the droplets
- ☐ D removes protons from the droplets

- (ii) Figure 16 shows the shape of the clouds of droplets in the disinfectant from two sprayers.



cloud from sprayer 1



cloud from sprayer 2

Figure 16

Sprayer 1 gives a negative charge to each droplet.

Sprayer 2 does not give any charge to the droplets.

Explain the difference in the shape of the two clouds.

(2)

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- (iii) Figure 17 shows a cloud of disinfectant, containing charged droplets, moving towards a seat in the bus.

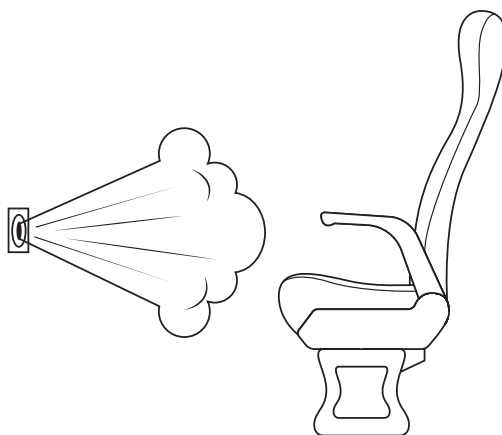


Figure 17

Explain how charging the droplets in the cloud of disinfectant makes sure that every part of the seat is disinfected.

(2)

*(d) Figure 18 shows an aeroplane being refuelled.

The fuel passes through a pipe into fuel tanks in the wings.

The fuel is very flammable.



(Source: © Stanisław Tokarski/123RF)

Figure 18

A build-up of static electric charge can be dangerous while the aeroplane is being refuelled.

Explain

- why the build-up of static electric charge would be dangerous
- how the danger is reduced.

(6)

(Total for Question 7 = 13 marks)

MARK SCHEMES

official Pearson Edexcel mark schemes



Question number	Answer	Additional guidance	Mark
1 (a)	B charge A, C and D are incorrect force or property associations		(1) AO1

Question number	Answer	Additional guidance	Mark
1(b) (i)	explanation linking like/same charges (on strands of hair) (1) (like charges) repel (1)	positives / protons negatives / electrons if no other mark allow one mark for charge / 'it' / electron(s) moves OR current (in body, to or from dome) ignore 'static'	(2) AO1

Question number	Answer	Additional guidance	Mark
1 (b) (ii)	substitution (1) $(\%) = \frac{10}{25} (\times 100)$ evaluation (1) $(\%) = 40 (\%)$	accept 0.4 accept 10 and 25 written next to numerator and denominator of the stated equation award full marks for the correct answer without working	(2) AO2

Question number	Answer	Additional guidance	Mark
1 (c)	electrostatic charges in action description charging a plastic comb electrostatic paint spraying safe fuelling of cars lightning small droplets are charged so they will stick to an object build-up of charge in a cloud causes a discharge to earth prevents a dangerous build-up of charge between a flowing liquid and a metal pipe produced by friction between solid surfaces	1 mark for one line correct 2 marks for two or three lines correct 3 marks for four lines correct. if more than one line is drawn from or to a box, do not credit any of those lines	(3) AO3

Total for Q1 = 8 marks

Question	Answer	Additional guidance	Mark
3(a)	The balloons have the same charge. This means that these balloons <u>repel</u> (1) each other. The charged particles transferred from the balloons to the cloth are called <u>electrons</u> (1) The cloth is left with a <u>negative</u> (1) charge. The unit of charge is the <u>coulomb</u> (1)	more than one word in a space loses the mark for that space	(4) AO1.1

Question	Answer	Additional guidance	Mark
3(b)	an explanation linking any two from: balloon attracted (1) (by) negative charges/electrons (at surface) on wall (1) idea of charge separation in wall (1)	ignore 'sticks/attaches to the wall' as in stem may be drawn on Figure 6 eg minus signs induced charges (in wall) may be drawn on Figure 6	(2) AO1.1

Question	Answer	Additional guidance	Mark
3(c)	an explanation linking two from: metal/wire is a conductor (1) charge (electrons) moves in the wire (1) electrons/negative charges (move) from ground to the sphere (1) (the sphere is) earth(ed) (1)	explanations using moving positive charges OR moving positive electrons can score a maximum of ONE mark for this item if no other marks scored allow protons or positive charge(s) (in this context) moves <u>to the ground</u> for this mark only (the sphere is) ground(ed) OR electrons neutralise (the positive charge on) the sphere	(2) AO1.1

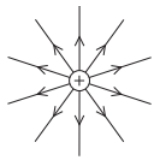
(Total for question 3 = 8 marks)

Question	Answer	Additional guidance	Mark
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Question Number:	Answer	Additional guidance	Mark
10(a)(i)	an explanation linking 3 of the following: friction (between cloth and comb) (1) transfer of electrons / charge {from plastic comb / on to the cloth} (1) electrons carry a negative charge (1) leaving excess positive charge on the comb (1)	reference to positive electrons or positive charge moving loses that mark point electrons/charges are rubbed off comb (on to cloth) leaving cloth with negative charge more protons than electrons (on the comb)	(3) AO 2 1

Question Number:	Answer	Additional guidance	Mark
10(a)(ii)	an explanation linking: a negative charge is induced (1) on the part of the paper closest to the comb (1) opposite charges attract (1)	allow a clear description of induction ignore references to positive charge being moved in this context only force of attraction sufficient to pick up the pieces of paper	(3) AO 2 1

Question Number:	Answer	Mark
10(b)	A  The only correct answer is A <i>B is not correct because the arrows are in the wrong direction</i> <i>C is not correct because the field is not circular</i> <i>D is not correct because the field is not circular</i>	(1) AO 1 1

Question Number:	Answer	Additional guidance	Mark
10(c)(i)	An explanation linking: sphere A has an electric field (1) sphere B is in it (1)	both spheres have electric fields the electric fields interact/overlap ignore nature of force; e.g. repulsion	(2) AO 2 2

Question Number:	Answer	Additional guidance	Mark
10(c)(ii)	a description to include: as the distance increases the force (on the sphere B) decreases (1) the greatest change is at smallest distances (1)	negative correlation non-linear gradient changes allow named non-linear functions such as exponential / inversely proportional in this context reference to inverse square law scores 2 marks	(2) AO 3 1a AO 3 1b

(Total for Question 10 = 11 marks)

Question number	Answer	Additional guidance	Mark
10 (a)(i)	rub (the balloon) (1) with a piece of cloth/hair/fur (1)	use friction allow on any insulated object	(2)

Question number	Answer	Additional guidance	Mark
10 (a)(ii)	B Negative charge has been added to the balloon A is incorrect removing negative charge would make the balloon positively charged. C and D are incorrect because positive charge cannot be moved		(1)

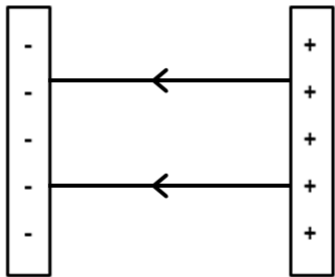
Question number	Answer	Additional guidance	Mark
10(a)(iii)	an explanation linking: method of handling balloons without discharging them (1) bring balloons near to each other (1) observation of repulsion (1)	hang balloons up by their strings they/balloons will push away (from each other)	(3)

Question number	Answer	Additional guidance	Mark
10 (b)(i)	B A and D are incorrect because a negative charge cannot induce a negative charge C is incorrect because the disc is insulated so negative charge cannot be removed		(1)

Question number	Answer	Additional guidance	Mark
10 (b)(ii)	an explanation linking: <u>electrons</u> / <u>negative</u> charges have flowed (1) from the metal disc / to the student / to earth/ground (1)	reject positive charge moving for first mark	(2)

Question number	Answer	Additional guidance	Mark
10(b)(iii)	at least three straight lines joining disc and plastic (1) arrow(s) from disc towards plastic (1)	judge by eye ignore curved lines at edge do not award mark if there are arrows in both directions	(2)

Question 10 = 11 marks

Question number	Answer	Additional guidance	Mark
10(a)	at least two horizontal straight lines between the two plates, judge by eye (1) arrows only from +ve towards -ve (1)	independent marks lines do not have to touch plates ignore curved lines at top and bottom of plate(s) example, scores 2 marks 	(2) AO1

Question number	Answer	Additional guidance	Mark
10(b)(i)	D gained electrons A and C are incorrect because protons are not exchanged in this context B is incorrect because it would give the particles a net positive charge		(1) AO1

Question number	Answer	Additional guidance	Mark
10(b)(ii)	an explanation linking any two from (soot particles are in an) electric field (1) AND EITHER attraction (1) (surface of) it/tube has (induced) <u>positive/opposite/unlike</u> charge (1) OR repulsion (1) rod (and soot particles) has a <u>negative/like/same</u> charge (1)		(2) AO1

Question number	Answer	Additional guidance	Mark
10(b)(iii)	(net charge) becomes zero (1)	discharged / charge is lost / charge moves on to the metal tube/ becomes neutral allow electrons for charge ignore becomes positively charged	(1) (AO1)

Question number	Answer	Additional guidance	Mark
10(b)(iv)	an explanation linking metal is a conductor (1) (connected to) earth/ground (1)	allow electrons for charge charge moves through the metal / tube / wire	(2) AO1

Question number	Answer	Additional guidance	Mark
10(c)	substitution into $Q = I \times t$ (1) $(Q =) 2.5 (\times 10^{-3}) \times 80$ evaluation (1) $(Q =) 0.2$ unit (1) coulombs OR C OR As	 allow 0.2 to any other power of ten for 1 mark award first two marks for correct answer without working independent mark allow c award 3 marks for 200 mC OR 200 mAs award 2 marks for 200 C OR 200 As	(3) AO2

Total for Question 10 = 11 marks

Question number	Answer	Mark
7 (a) i	A gained electrons Options B, C and D are incorrect explanations	(1) AO1

Question number	Answer	Additional guidance	Mark
7 (a) ii	A description to include electrons / negative charges move (1) down the wire / to earth (1)		(2) AO1

Question number	Answer	Additional guidance	Mark								
7 (a) iii	A description including one row from: <table><tr><th>use</th><th>description</th></tr><tr><td>fuelling cars / plane (1)</td><td>charge / voltage could build up causing a spark / fire: (avoided by earthing (the pump) (1)</td></tr><tr><td>(insecticide / paint) sprayers (1)</td><td>earthed object gains (induced) charge(s) to attract paint / insecticide (1)</td></tr><tr><td>kettle / other electrical device (1)</td><td>earthing the outside prevents shock (to user) (1)</td></tr></table>	use	description	fuelling cars / plane (1)	charge / voltage could build up causing a spark / fire: (avoided by earthing (the pump) (1)	(insecticide / paint) sprayers (1)	earthed object gains (induced) charge(s) to attract paint / insecticide (1)	kettle / other electrical device (1)	earthing the outside prevents shock (to user) (1)	Other examples are possible in this context also allow to prevent shock	(2) AO1
use	description										
fuelling cars / plane (1)	charge / voltage could build up causing a spark / fire: (avoided by earthing (the pump) (1)										
(insecticide / paint) sprayers (1)	earthed object gains (induced) charge(s) to attract paint / insecticide (1)										
kettle / other electrical device (1)	earthing the outside prevents shock (to user) (1)										

Question number	Answer	Additional guidance	Mark
7 (b)	drawing lines to include any two from any vertical line (in between plates) (1) at least two parallel lines (1) any arrow downwards (to show direction) (1)	judge by eye ignore any curved lines at the ends of the plates reject contradicting arrows for this mp	(2) AO1

Question number	Indicative content	Mark
7 (c) *	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant. A02 (strand 2) (6 marks) 1. rub a strip with the cloth 2. test to see its charge (positive or negative) by rubbing against the coulombmeter 3. place the strip in the holder 4. charge another strip by friction (rubbing) 5. test its charge with the meter 6. bring the second strip up towards the one in the holder; either attracts or repels 7. repeat 1-6 with another charged strip 8. repeat steps 1-3, but then charge an acetate strip, again detecting the sign of its charge, as before 9. bring the charged acetate (+) strip up to the charged polythene (-) strip; the one in the stirrup should now be attracted / move towards the other	(6) AO2

AO targeting: 6 marks AO2 strand 2

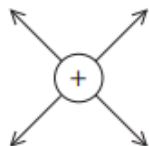
Level	Mark	Descriptor
	0	No awardable content
Level 1	1-2	- The explanation attempts to link and apply knowledge and understanding of scientific enquiry, techniques and procedures, flawed or simplistic connections made between elements in the context of the question. - Lines of reasoning are unsupported or unclear. (AO2)
Level 2	3-4	- The explanation is mostly supported through linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, some logical connections made between elements in the context of the question. - Lines of reasoning mostly supported through the application of relevant evidence. (AO2)
Level 3	5-6	- The explanation is supported throughout by linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, logical connections made between elements in the context of the question. - Lines of reasoning are supported by sustained application of relevant evidence. (AO2)



Summary for guidance

Level	Mark	Additional Guidance	General additional guidance – the decision within levels e.g. - At each level, as well as content, the scientific coherency of what is stated will help place the answer at the top, or the bottom, of that level.
	0	No rewardable material.	
Level 1	1–2	<u>Additional guidance</u> A limited explanation with at least two steps of a suitable procedure	<u>Possible candidate responses</u> rub a strip with the cloth / give it a charge place the strip in the holder explains consequent attraction / repulsion
Level 2	3–4	<u>Additional guidance</u> Partially complete explanation of a suitable procedure with at least three steps and some purpose indicated	<u>Possible candidate responses</u> As above with bring a second strip up towards the one in the holder either attracts or repels repeated with like / unlike charges use of coulombmeter
Level 3	5–6	<u>Additional guidance</u> Detailed explanation of a suitable procedure with most steps and a clear logic in what is being proposed	<u>Possible candidate responses</u> As above with test charge with the meter to see if it's (+) or (-) detailed use of acetate / polythene strips with purpose

Question 7 =13 marks

Question number	Answer	Additional guidance	Mark
7 (a)	 ☐ A B C and D are incorrect because they do not show the electric field around a point charge.		(1) AO1

Question number	Answer	Additional guidance	Mark
7 (b)	rub the rod with (a cloth) (1)	friction	(1) AO1

Question number	Answer	Additional guidance	Mark
7 (c)(i)	A adds electrons to the droplets B and D are incorrect because protons cannot be added or removed from droplets. C is incorrect because this would give an overall positive charge		(1) AO1

Question number	Answer	Additional guidance	Mark
7 (c)(ii)	an explanation linking cloud from sprayer 1 is more dispersed (than from sprayer 2) (1) the droplets / charges repel each other (1)	accept reverse argument spread out more (covers) larger area bigger / wider	(2) AO3

Question number	Answer	Additional guidance	Mark
7 (c)(iii)	an explanation linking (droplets) attracted (to seat) (1) including parts not in direct line of spray (1)	 induced charge (on seat) spreads out (over all the seat)	(2) AO2

Question number	Indicative content	Mark
*7(d)	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant. Description of danger • build-up of charge could create a spark • flammable fuel can easily catch fire • spark could ignite fuel • igniting fuel could cause a fire / explosion of the plane Description of how risk is reduced • The pipe and the airplane are connected by a metal wire • The metal wire is connected to ground/earth • Pipe and airplane at same potential • Metal is a conductor • Electrons can move through metal wire • No charge build-up • No danger of spark • Reduce charge separation by plausible method such as reduce flow rate/ wider pipe / less friction	(6) AO1

Level	Mark	Descriptor
	0	No rewardable material.
Level 1	1-2	- Demonstrates elements of physics understanding, some of which is inaccurate. Understanding of scientific, enquiry, techniques and procedures lacks detail. (AO1) - Presents a description which is not logically ordered and with significant gaps. (AO1)
Level 2	3-4	- Demonstrates physics understanding, which is mostly relevant but may include some inaccuracies. Understanding of scientific ideas, enquiry, techniques and procedures is not fully detailed and/or developed. (AO1) - Presents a description of the procedure that has a structure which is mostly clear, coherent and logical with minor steps missing. (AO1)
Level 3	5-6	- Demonstrates accurate and relevant physics understanding throughout. Understanding of the scientific ideas, enquiry, techniques and procedures is detailed and fully developed. (AO1) - Presents a description that has a well-developed structure which is clear, coherent and logical. (AO1)

Level	Mark	Additional Guidance	General additional guidance – the decision within levels
	0	No rewardable material.	e.g. - At each level, as well as content, the scientific coherency of what is stated will help place the answer at the top, or the bottom, of that level.
Level 1	1-2	<u>Additional guidance</u> Two statements	<u>Possible candidate responses</u> There could be a fire that could lead to an explosion.
Level 2	3-4	<u>Additional guidance</u> limited explanation linking facts about dangers arising from charge OR linking facts about how danger is reduced	<u>Possible candidate responses</u> A spark could cause a fire and explosion. OR Build-up of charge prevented by a wire connected to ground
Level 3	5-6	<u>Additional guidance</u> Detailed explanation about danger AND how danger is reduced. (one may be more detailed than the other but both should be present)	<u>Possible candidate responses</u> There could be a spark that could cause a fire in the fuel and explode. AND Wires between the airplane, pipe and ground prevent the build-up of charge.

Total 13 marks