

Question Number	Answer	Acceptable answers	Mark
11(a)	energy transferred per second		(1)

Question Number	Answer	Acceptable answers	Mark
1(b)(i)	substitution (1) 0.25 x 230 evaluation (1) 58 (W)	accept 57 to 58, and 60 (W) give full marks for correct answer, no working	(2)

Question Number	Answer	Acceptable answers	Mark
1(b)(ii)	A description including the following points <ul style="list-style-type: none"> • (rate) of flow (1) • (of) charge (1) 	per second/flows/flowing electrons/ions/coulombs/C IGNORE electricity/amps/A	(2)

Question Number	Answer	Acceptable answers	Mark
1(c)(i)	(current) it is reduced	gets smaller/ decreases/ slows down/ drops/ lower	(1)

Question Number	Answer	Acceptable answers	Mark
1 (c) (ii)	<p>conversion of watts to kilowatts (1)</p> <p>substitution (1) 0.0005 x 48 x 26</p> <p>evaluation (1) 0.62(4)(p)</p> <p>Note: 0.0005 x 48 x 26 scores 2 (conversion and substitution marks)</p>	<p>This is a 'show that' so marks are only awarded if working is shown.</p> <p>For no conversion of power but otherwise correct, 0.5 x 48 x 26 (1)</p> <p>624 (p) (1)</p> <p>Any other power of ten error in power or cost seen in substitution 1 mark maximum</p> <p>Answers with no working get zero marks.</p>	(3)

Question Number	Answer	Acceptable answers	Mark
1 (c) (iii)	<p>Any one of the following points</p> <ul style="list-style-type: none"> • ideas of energy conservation (1) • ideas of atmospheric polluting effects (1) • ideas of possible dangers (1) • reduces life of parts (TV) (1) 	<p>wastes energy (if left on) RA (NOT wastes electricity)</p> <p>CO₂ / SO₂ production/global warming/acid rain/greenhouse gases</p> <p>fire hazards/overheating /safer(when off)</p> <p>Ignore ozone layer references</p>	(1)

Question Number	Answer	Acceptable answers	Mark
2(a)(i)	positive / + /plus /+ve /positively (charged)	accept poor spelling of positive	(1)

Question Number	Answer	Acceptable answers	Mark
2(a)(ii)	An explanation linking two from the following points <ul style="list-style-type: none"> • repulsion / repels (1) • (because) same charge (1) • (force) greater than gravity (1) 	independent mark positive charges repel each other (2) both positive so repel(2) positive ball attracted to negative lid (2)	(2)

Question Number	Answer	Acceptable answers	Mark
2(b)	An explanation linking the following points <ul style="list-style-type: none"> • electrons move (1) • from ground to lid (1) 	negative charge moves to neutralise positives	(2)

Question Number	Answer	Acceptable answers	Mark
2(c)	An explanation linking the following points <ul style="list-style-type: none"> • discharged /earthed so falls(1) • charged again/at plate so rises/repels (1) 	pulled down by gravity reached the plate and process repeats ignore direction of charge flow – already assessed	(2)

Question Number	Answer	Acceptable answers	Mark
2(d)	B		(1)

Question Number	Answer	Acceptable answers	Mark
3 (ai)	Substitution (1) 1.5 x 6 Evaluation (1) 9 (W) Ignore any unit given by candidate.	Power of 10 error max 1 mark Give full marks for correct answer with no working shown	(2)

Question Number	Answer	Acceptable answers	Mark
3 (aii)	<ul style="list-style-type: none"> • More turns on the coil (1) • More powerful/stronger magnet(s) (1) 	Wrap coils on iron (core/former)/ more coils/twists/loops. Bigger coil is insufficient. More magnets. Bigger/larger magnet is insufficient. Ignore increase speed of rotation	(2)

Question Number	Answer	Acceptable answers	Mark
3 (aiii)	A description including <ul style="list-style-type: none"> • in one direction only for DC (1) • reversing direction for AC (1) 	'DC goes straight' is insufficient AC switches/changes direction OR moves to and fro 'AC goes different ways' is insufficient. Diagram with labelled arrows could get 2 marks.	(2)

Question Number		Indicative Content	Mark
QWC	*3(b)	<p>A comparison including some of the following ideas</p> <ul style="list-style-type: none"> Transformers can be used or {voltages/currents} can be {changed/transformed} AC (can transmit) at lower current/high(er) voltage National Grid is (usually) over ground (DC cables (were) underground) Less energy lost in transmission National Grid system can supply to customers further away Possible to create a grid linking power stations More flexibility in voltage for consumer Consumer can draw large(r) current More flexibility in power drawn Great(er) range of devices can be powered <p>Ignore methods of electricity production</p>	(6) Exp
Level	0	No rewardable content	
1	1 - 2	<ul style="list-style-type: none"> a limited (maybe implied) comparison giving one fact e.g: AC can be at high(er) voltage OR the National Grid can supply houses not close to a power station/ further (away/than the New York system.) the answer communicates ideas using simple language and uses limited scientific terminology spelling, punctuation and grammar are used with limited accuracy 	
2	3 - 4	<ul style="list-style-type: none"> a simple comparison including two ideas which may be linked or not eg Nat. Grid can supply whole country and can be used for more appliances (than just lighting). e.g: AC can be transmitted further (than DC) (because it) wastes less energy the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately spelling, punctuation and grammar are used with some accuracy 	
3	5 - 6	<ul style="list-style-type: none"> A detailed comparison including at least three ideas, with at least one direct link between two of them. e.g. AC can be transmitted further (than DC) because AC can be transformed to {lower current/high(er) voltages}. OR AC can be transformed to {lower current/high(er) voltages}. Greater range of devices used. the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately spelling, punctuation and grammar are used with few errors 	

Total for Question 6 = 12 mark

Question Number	Answer	Acceptable answers	Mark
4(a)(i)	C		(1)

Question Number	Answer	Acceptable answers	Mark
4(a)(ii)	B		(1)

Question Number	Answer	Acceptable answers	Mark
4(b)	substitution (1) 3.7 x 13 evaluation (1) 48 (C)	48.1 Correct answer with no calculation scores 2 marks	(2)

Question Number	Answer	Acceptable answers	Mark
4(c)(i)	Correct responses can be seen in (i) r (ii) An explanation linking <ul style="list-style-type: none"> • <u>electrons</u> (1) and <u>one</u> of <ul style="list-style-type: none"> • removed by friction (1) • (transferred) <u>to</u> plastic (1) 	["positive electrons/ protons moving", seen anywhere in part (i) or (ii) loses this mark] ignore reference to charge before rubbing transferred from cloth	(2)

Question Number	Answer	Acceptable answers	Mark
4(c)(ii)	opposite to charge on plastic (1) <u>equal</u> to charge on the plastic (1)	charge on cloth is positive <u>same size</u> as charge on plastic electrons transferred from the cloth equal to electrons lost by cloth	(2)

Total question 1 = 8 marks