

Mark Scheme (Results)

June 2011

360Science

GCSE Additional Science
Structured Paper P2 (5020F/1F)

GCSE Physics
Structured Paper P2 (5048F/1F)

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**5020F & 5048F Mark Scheme
June 2011**

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
1(a)	electrons ; protons neutrons ; ; (either order)	any recognisable spelling, allow singular of any e.g. electron, neutron, proton	apostrophes sign (e.g. positive or negative)	in the top line, reject protons, neutrons, ions reject electrons and ions in either space for 1 mark each	(3)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
1(b)	positive ;				(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
2(a)	20 (units);	100-80	J joules 10, 70, 90		(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
2(b)	kinetic and gravitational potential energy ;				(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
2(c)	70 (units) ;	80-10	J joules		(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
2(d)	Any two marks from 1. mention of any suitable energy type; 2. mention of any suitable energy losing mechanism ; 3. mention of any suitable place ;	heat, sound, waste e.g. air resistance, friction, conduction, vibration e.g. at wheels, of the track (energy is) dissipated as heat allow 2 marks	ideas of energy converted (lost) into speed, acceleration, movement mention of gpe/ke/going up the slope		(2)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
3(a)	A turbine ; B generator ;				(2)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
3(b)	any ONE from 1. does not contribute to global warming ; 2. high energy density/less fuel needed;	<ul style="list-style-type: none"> • does not emit carbon dioxide /greenhouse gas/ harmful gases /fumes /RA • fuel can be reprocessed /recycled 	<ul style="list-style-type: none"> • economic arguments • efficiency • renewability • better for the environment • finite resource arguments 		(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
3(c)(i)	fission ;	nuclear fission accept alternative spellings		fusion	(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
3(c)(ii)	radioactive ;	<ul style="list-style-type: none"> • emits radiation / alpha / beta /gamma • toxic • damages/ionises cells /eq • unstable (nuclei /isotope) 	damage to people	references to electron shells or reactivity for (c)(ii)	(1)
(iii)	with (very) long half life ;	<ul style="list-style-type: none"> • allow ½ life of 25yrs or more • take a (very) long time to decay • stay /still be (radio)active for years • keep splitting up <p>mark where seen for both parts</p>	<ul style="list-style-type: none"> • stay around for years • reactive /reactivity 		(1)

Question Number	Answer		Acceptable answers	Ignore	Reject	Mark
4(a)(i)	substitution	d= 2 x 220	bald correct answer = 2 marks	incorrect units		(2)
	evaluation	440 (m)				

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
4(a)(ii)	Marks may be in any order. 1. (flashes of)light get further apart ; 2. idea that plane changes direction;	allow dots for lights path is curved /bent	getting dimmer		(2)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
4(b)	for 2 marks all 4 correct for 1 mark any 2 or 3 correct 1. up arrow same size as weight 2. backwards arrow same size as thrust ; 3. L (labelled) up 4. R (labelled) backwards ; ;	tolerance +/-20%			(2)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
5(a)	like charges repel ;	<ul style="list-style-type: none"> • (negative) hairs repel (each other) • hair repelled by head • (because of) static (electricity) • electrons repel 	<ul style="list-style-type: none"> • repeat of stem • idea of transfer of electrons to positive hair 		(1)

Question Number	Answer	Acceptable answers	Ignore	Reject	Mark
5(b)	<p>Any three from:</p> <p>1.comb / plastic is an insulator;</p> <p>2.idea of charging by friction or rubbing;</p> <p>3.electrons;</p> <p>4.(negative charges) <u>transfer</u>;</p> <p>5. from comb (to hair) ;</p>	friction causes static	repeat of stem e.g. 'combs' 'puts a negative charge'	<p>for MP3,4 and 5</p> <p>idea of protons or positive charges moving</p>	(3)

Question Number	Answer		Acceptable answers	Ignore	Reject	Mark
6(a)	substitution	= 80×7.5 ;	bald correct answer = 2 marks unit independent acceptable units are <ul style="list-style-type: none"> • kg m/s^2 • newton 		for unit mark <ul style="list-style-type: none"> • Ns • kg/m/s^2 	(3)
	evaluation	= 600;				
	unit	N;				

Question Number	Answer		Acceptable answers	Ignore	Reject	Mark
6(b)	substitution	(a =) $\frac{0 - 25}{0.12}$	$a = \frac{25 - 0}{0.12}$	signs		(2)
	evaluation	(-)210	208 bald correct answer = 2 marks			

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