



Mark Scheme (Results)

November 2011

GCSE Physics
5PH1F/01

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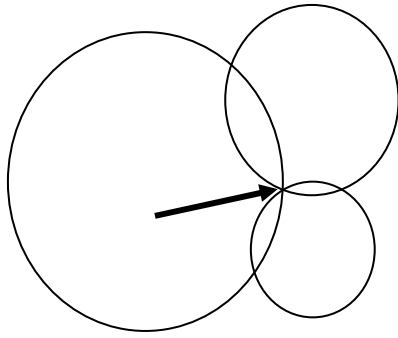
**5PH1F/01 Mark Scheme
November 2011**

Question Number	Answer	Acceptable answers	Mark
1(a)(i)	B		(1)

Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	<ul style="list-style-type: none"> starting with red (1) any two others in correct sequence (1) 	roygbiv	(2)

Question Number	Answer	Acceptable answers	Mark
1(b)		<p>checking money</p> <p>mobile phones</p> <p>seeing broken bones</p> <p>sterilising food</p> <p>thermal imaging</p> <p>3 correct 3 marks 2 correct 2 marks 1 correct 1 mark</p> <p>more than 1 line from a wave box no marks for that box</p>	(3)

Question Number	Answer	Acceptable answers	Mark
1(c)	<p>A description including the following:</p> <ul style="list-style-type: none"> infrared causes burns (to the skin) / ('skin) blistering (1) (whereas) ultraviolet causes { cell damage / (skin) cancer / sunburn} (1) 	<p>Ignore {sunburn / cancer}</p> <p>damage to eyes</p> <p>U-V (potentially) more dangerous than IR=1</p>	(2)

Question Number	Answer	Acceptable answers	Mark
2(a)	C		(1)
Question Number	Answer	Acceptable answers	Mark
2(b)(i)	<p>An explanation linking the following</p> <ul style="list-style-type: none"> the earthquake will be one of the points of intersection (1) (but) there are two points (of intersection) (1) 	<p>(might implies) further evidence needed possibly at a different place (NOT places)</p> <p>50:50 chance</p>	(2)
Question Number	Answer	Acceptable answers	Mark
2(b)(ii)		<p>any arrow clearly indicating the common point of intersection ignore ambiguous arrows</p> <p>a small circle or cross at the common intersection</p>	(1)
Question Number	Answer	Acceptable answers	Mark
2(c)	<ul style="list-style-type: none"> S- wave arrives at 17 minutes P-wave arrives 9.5 minutes (1 for both) difference in arrival time = 7.5 (minutes) (1) 	<p>7.0 to 8.0 inclusive 7.30/7:30 give full marks for correct answer, no working</p> <p>e.c.f from readings marked on graph or stated for a different distance on graph</p>	(2)
Question Number	Answer	Acceptable answers	Mark
2(d)	<p>A description including the following</p> <ul style="list-style-type: none"> vibration (1) in same direction as wave/energy moves (1) 	<p>up and down/side to side/shake</p> <p>backwards and forwards/back and forth scores 2</p>	(2)

Question Number	Answer	Acceptable answers	Mark
3(a)	A		(1)

Question Number	Answer	Acceptable answers	Mark
3(b)	C		(1)

Question Number	Answer	Acceptable answers	Mark
3(c)	reference to the connection between water and life	<p>water is needed for life see if we could live there could sustain life water gives possibility of life</p> <p>a definite statement that water shows life scores ZERO e.g. prove that there is life there shows signs of life</p>	(1)

Question Number	Answer	Acceptable answers	Mark
3(d)	<p>substitution (1) e.g. $\frac{150\,000\,000}{500}$</p> <p>evaluation (1) 3 (00 000)</p> <p>evaluation consistent with unit (1) 300 000 (km/s)</p>	<p>$\frac{150\,000\,000\,000}{500}$</p> <p>Ignore powers of ten e.g. bald 30 000 = 2 bald 0.3 = 2</p> <p>give full marks for correct answer, no working</p> <p>{ 300 000 000 m/s (with some working) = 3 marks bald 300 000 000 m/s = 2 }</p>	(3)

Question Number	Answer	Acceptable answers	Mark
3(e)(i)	<p>An explanation linking any two from</p> <ul style="list-style-type: none"> • (telescope {above / out of}) {atmosphere/air} (1) • dust/clouds/obstructions etc (in atmosphere) (1) • no <u>light</u> pollution in space (1) 		(2)

Question Number	Answer	Acceptable answers	Mark
3(e)(ii)	<p>An explanation linking the following</p> <ul style="list-style-type: none"> • pulled together by gravity (1) • (converting) {potential / kinetic} energy to {thermal/heat} (1) 	<p>collisions create friction (not bald friction) friction produces {thermal/heat} (very) high pressure produced</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(a)	<p>The diagram shows a DC motor with five components labeled in boxes: slip ring, coil, axle, brush, and magnet. Two boxes labeled 'P' and 'Q' have lines pointing to the 'coil' and 'magnet' respectively.</p>	More than one line from either P or Q (or both) loses the mark for that box	(2)

Question Number	Answer	Acceptable answers	Mark
4(b)(i)	B		(1)

Question Number	Answer	Acceptable answers	Mark
4(b)(ii)	<p>An explanation linking the following</p> <ul style="list-style-type: none"> increased brightness (1) (due to) increased voltage (1) 	<p>'fuses' / 'blows' / gets hotter</p> <p>{ increased / faster } current</p> <p>increased { power / energy }</p>	(2)

Question Number	Answer	Acceptable answers	Mark
4(c)	<p>substitution (1)</p> <p>2 x 12</p> <p>evaluation (1)</p> <p>24</p> <p>unit (1)</p> <p>W</p>	<p>Give full marks (2) for correct answer, no working</p> <p>(accept bald 2.4 for substitution) = 1</p> <p>watt(s), AV, VA, J/s</p> <p>If only one number and one unit their position is immaterial</p> <p>otherwise, mark the number in the power generated space and the unit in the unit space</p>	(3)

Question Number	Answer	Acceptable answers	Mark
4(d)	A description including the following <ul style="list-style-type: none">• voltage (1)• increases (1)	current decreases (ignore speed of current) Accept for 1 mark <ul style="list-style-type: none">• increases current AND reduces voltage• voltage higher and bigger {current/power}• power decreases 'it' increases/decreases = 0	(2)

Question Number	Answer	Acceptable answers	Mark
5(a)(i)	point plotted = +/- ½ square		(1)

Question Number	Answer	Acceptable answers	Mark
5(a)(ii)	attempt at smooth curve through at least 5 crosses	Reject <ul style="list-style-type: none"> • clear tramlining • dot to dot Ignore extrapolations	(1)

Question Number	Answer	Acceptable answers	Mark
5(a)(iii)	A description including the following <ul style="list-style-type: none"> • as the object distance increases the image distance decreases (1) • non linear / not in proportion (1) 	reverse argument at a changing rate	(2)

Question Number	Answer	Acceptable answers	Mark
5(a)(iv)	A description including two of the following <ul style="list-style-type: none"> • magnified (1) • erect (1) • virtual (1) 	bigger the right way up not real	(2)

Question Number		Indicative content	Mark
QWC	5(b)	<p>A description including some of the following</p> <p>Similarities</p> <ul style="list-style-type: none"> • both use lenses • (lenses) acts as eyepieces • both produce images of distant objects • eyepiece magnifies • (eyepiece magnifies) real image produced by objective in both • other <p>Differences</p> <ul style="list-style-type: none"> • reflector uses mirror • (reflector uses mirror) {as objective / to collect light} • refractor uses lens • (refractor uses lens) {as objective / to collect light} • reflector can collect more light than a refractor • reflector reduces {abberation /gives better quality image} / ORA • refractors are easier to support / ORA • other 	(6)
Level	0	no rewardable material	
1	1-2	<ul style="list-style-type: none"> • a limited description of either a similarity or a difference e.g. both magnify distant objects • 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 description which includes at least one similarity and one difference / a detailed description of a similarity or a difference e.g. both magnify distant objects but the reflector uses a mirror and a lens while the refractor has only lenses • 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 description to include both similarities and differences with a clear description of the comparison e.g. the eyepiece in each produces a magnified image of the objective image. The reflector has a mirror as the objective while the refractor has a lens • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

Question Number	Answer	Acceptable answers	Mark
6(a)	A		(1)

Question Number	Answer	Acceptable answers	Mark
6(b)(i)	6%	100 - 94	(1)
(ii)	comparing reflected amount for water with any one of the others (1)	saying one {named material (on the graph) is/all materials (on the graph) are} solid	(1)

Question Number	Answer	Acceptable answers	Mark
6(c)(i)	An explanation to include the following <ul style="list-style-type: none"> • more thermal (heat) energy is absorbed (1) • because water (liquid) absorbs more than ice (solid) (1) 	<p>more radiation is absorbed</p> <p>because water (liquid) reflects less than ice (solid)</p> <p>because less ice surface to reflect</p> <p>because more water surface to absorb</p>	(2)

Question Number	Answer	Acceptable answers	Mark
6(c)(ii)	its temperature rises	<p>gets hotter</p> <p>water level increases/gets higher</p> <p>Ignore '{water/it} {increases/rises}'</p> <p>Reject toxicity</p>	(1)

Question Number		Indicative content	Mark
QWC	*6(d)	<p>A description including some of the following</p> <ul style="list-style-type: none"> • solar / heat / light • photosynthesis • chemical / fossil fuel • burning • thermal • in steam • kinetic • in turbine • electrical • in generator 	(6)
Level	0	no rewardable material	
1	1-2	<ul style="list-style-type: none"> • a limited description which identifies an energy in an appropriate place e.g. thermal energy in the boiler OR e.g. the (same) energy flows from the boiler to the turbine • 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 description which includes details of a relevant energy transfer e.g. (steam causing) the turbine to rotate turns the coil in the generator transferring kinetic energy into electrical 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 description to includes details of a sequence of transfers e.g. chemical energy stored in the coal is transferred in the boiler to thermal energy producing steam. The steam turns the turbine which turns the coil. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors 	

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