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Mark Scheme (Results)

November 2011

GCSE Physics
5PH1F/01

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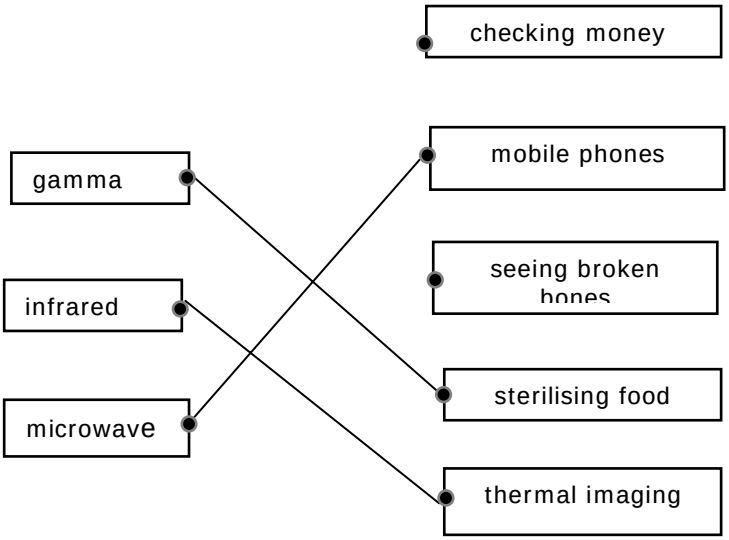
Question Number	Answer	Acceptable answers	Mark
1(a)(i)	B		**(1)**

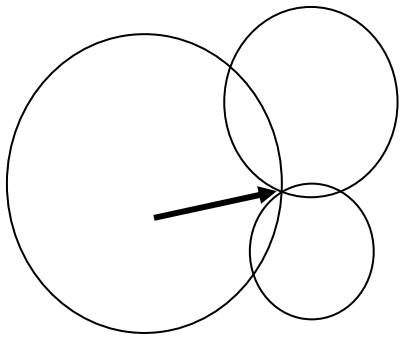
Question Number	Answer	Acceptable answers	Mark
1(a)(ii)	• starting with red (1) • any two others in correct sequence (1)	roygbiv	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(b)		3 correct 3 marks 2 correct 2 marks 1 correct 1 mark more than 1 line from a wave box no marks for that box	**(3)**

Question Number	Answer	Acceptable answers	Mark
1(c)	A description including the following: • infrared causes burns (to the skin) /('skin) blistering (1) • (whereas) ultraviolet causes {cell damage / (skin) cancer / sunburn} (1)	Ignore {sunburn / cancer} damage to eyes U-V (potentially) more dangerous than IR=1	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(a)	C		**(1)**

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	An explanation linking the following • the earthquake will be one of the points of intersection (1) • (but) there are two points (of intersection) (1)	(might implies) further evidence needed possibly at a different place (NOT places) 50:50 chance	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)		any arrow clearly indicating the common point of intersection ignore ambiguous arrows a small circle or cross at the common intersection	**(1)**

Question Number	Answer	Acceptable answers	Mark
2(c)	• S- wave arrives at 17 minutes P-wave arrives 9.5 minutes (1 for both) • difference in arrival time = 7.5 (minutes) (1)	7.0 to 8.0 inclusive 7.30/7:30 give full marks for correct answer, no working e.c.f from readings marked on graph or stated for a different distance on graph	**(2)**

Question Number	Answer	Acceptable answers	Mark
2(d)	A description including the following • vibration (1) • in same direction as wave/energy moves (1)	up and down/side to side/shake backwards and forwards/back and forth scores 2	**(2)**

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

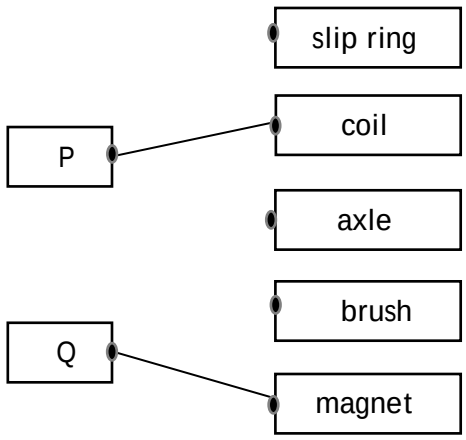
Question Number	Answer	Acceptable answers	Mark
3(b)	C		**(1)**

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

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

Question Number	Answer	Acceptable answers	Mark
3(e)(i)	An explanation linking any two from • (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)	An explanation linking the following • pulled together by gravity (1) • (converting) {potential / kinetic} energy to {thermal/heat} (1)	collisions create friction (not bald friction) friction produces {thermal/heat} (very) high pressure produced	**(2)**

Question Number	Answer	Acceptable answers	Mark
4(a)		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)	An explanation linking the following • increased brightness (1) • (due to) increased voltage (1)	'fuses' / 'blows' / gets hotter {increased / faster} current increased {power / energy}	**(2)**

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

Question Number	Answer	Acceptable answers	Mark
4(d)	A description including the following • voltage (1) • increases (1)	 current decreases (ignore speed of current) Accept for 1 mark • 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 • clear tramlining • dot to dot Ignore extrapolations	**(1)**

Question Number	Answer	Acceptable answers	Mark
5(a)(iii)	A description including the following • 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 • magnified (1) • erect (1) • virtual (1)	bigger the right way up not real	**(2)**

Question Number		Indicative content	Mark
QWC	**5(b)**	A description including some of the following **Similarities** • 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 **Differences** • 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**	• 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**	• 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**	• 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 • more thermal (heat) energy is absorbed (1) • because water (liquid) absorbs more than ice (solid) (1)	more radiation is absorbed because water (liquid) reflects less than ice (solid) because less ice surface to reflect because more water surface to absorb	**(2)**

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

Question Number		Indicative content	Mark
QWC	***6(d)**	A description including some of the following • 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**	• 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**	• 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**	• 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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