edexcel

Mark Scheme (Results)

January 2015

International GCSE Physics (4PH0 1P)

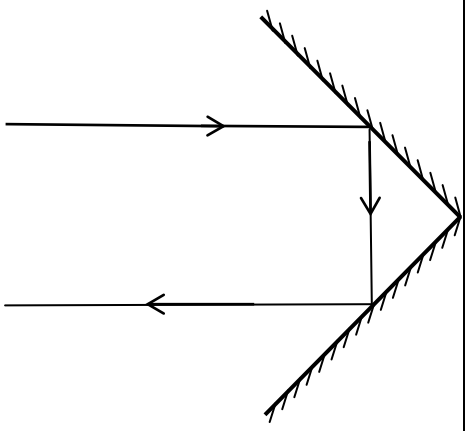
Question number	Answer	Notes	Marks
5	Any five of: MP1. the air (molecules are/is) warmed / heated (by the coal fire); MP2. air expands / molecules move apart; MP3. air becomes less dense; MP4. **hot** air or **less dense** air rises; MP5. cooler air (from outside the furnace) displaces warm air; MP6. (above the chimney) air cools / contracts / becomes more dense; MP7. **cooled** air falls; MP8. Process (of convection) is repeated / continuous;	NB 'convection' is in the stem allow another gas for air -1 for explanations which include the idea that the air particles become less dense/air particles expand/eq	5

Total 5 marks

Question number	Answer	Notes	Marks
6 (a) (i)	only 2.65 (mm) circled;		1
(ii)	discards anomaly; performs averaging; quotes answer to 3sf / 2 d.p.; e.g. 3.60 + 3.62 + 3.63 + 3.61 ~~+ 2.65~~ + 3.62 + 3.60 + 3.61 (= 25.29) 25.29 ÷ 7 = 3.612857... = 3.61 (to 3 sf	÷ 7 or ÷ 8 sufficient even if sum is incorrect e.g. 3.61→3 marks 3.6128 →2 marks (wrong sf) 3.49→ 2 marks (includes anomaly) 3.4925→ 1 mark (includes anomaly and wrong sf)	3
(b) (i)	Bar chart/graph;	condone histogram	1
(ii)	Idea that (size) data is discontinuous; and either of - Idea that there are no values between sizes; Idea that a line graph would indicate continuity;	discrete, categoric, non continuous allow "no half sizes"	2
(iii)	Idea of inverse relationship; Idea of non-linearity;	allow a pattern sentence, condone negative correlation allow "almost" linear Ignore idea of proportionality	2

Question number	Answer	Notes	Marks
6 (c)	Any four of - MP1. idea of a displacement method; MP2. instrument to measure volume (of liquid displaced); MP3. a relevant experimental detail; MP4. second relevant experimental detail; MP5. use of **known liquid density** to find volume from mass (if appropriate);	 Allow overspill or rise in level Allow balance if mass method used (see MP5) Including • idea of repetition or averaging at any stage • **full** immersion of object • check liquid level in displacement can, • subtracting before and after volume measurements , • care with meniscus (e.g. in the measuring cylinder), • check zero or tare of balance • avoid parallax when reading scale as above	4

Total 13 marks

Question number	Answer	Notes	Marks
15 (a)	Reflection at first surface correct; Ray emerges parallel; 	Judge diagram by eye	2
(b)	rearrangement and correct substitution; factor of 2 taken into account; value given to at least 2 significant figures; e.g. Time to reach moon = ½ x 2.6 = 1.3 (s) Distance = time x speed = 1.3 x 300 000 = 390 000 (km) OR Total distance = 2.6 x 300 000 = 780 000 So distance to moon = ½ x 780 000 = 390 000 (km)	working must be shown Reverse argument (starting with 400000 km) allow 2 max	3

Question number	Answer	Notes	Marks
15 (c) (i)	Any three of - MP1. idea that distance from Earth to Moon varies; MP2. idea that orbit of Moon is not (quite) circular; MP3. idea that change is cyclic / is regular / takes (about) a month; MP4. idea that Earth is not (quite) at centre of (moon) orbit; MP5. appropriate <u>use</u> of time data; MP6. appropriate calculation of a distance;	allow • further/nearer • orbit elliptical • orbit radius varies • sinusoidal • 26.5 / 27 days E.g. largest time difference = 2.70 – 2.47 = 0.23 s e.g. $\Delta s = ½ \times ct$ $= ½ \times 3 \times 10^8 \times 0.23$ = 34 500 km	3
(ii)	Any one of - MP1. (average) moon orbit radius becomes larger; MP2. moon moving away (from Earth); MP3. gravitational force (or gravity) becoming weaker;	Allow reverse argument	1

Total 9 marks