edexcel

Mark Scheme (Results)

Summer 2012

International GCSE

Physics (4PH0) Paper 1P
Science Double Award (4SC0) Paper 1P

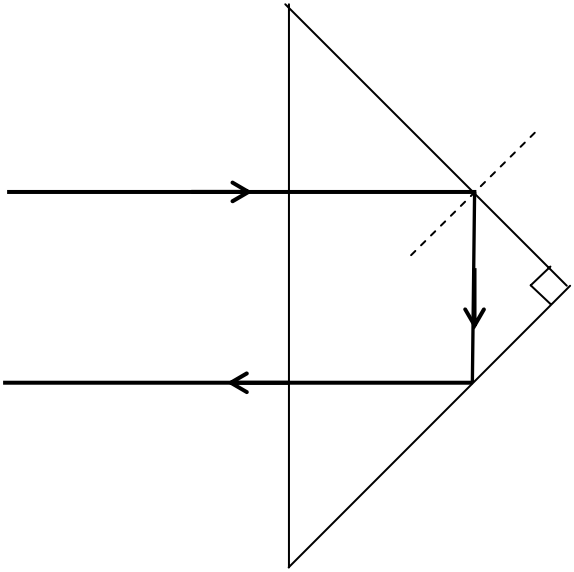## Edexcel Level 1/Level 2 Certificate

Physics (KPH0) Paper 1P
Science (Double Award) (KSC0) Paper 1P

ALWAYS LEARNING

PEARSON

INTERNATIONAL GCSE PHYSICS PAPER 1P – SUMMER 2012

Question number			Answer	Notes	Marks
1	(a)		A - microwave(s) B - X–rays	REJECT 'micro' REJECT 'X' ACCEPT capital or lower case X, with or without hyphen	2
	(b)	(i)	C		1
		(ii)	D		1

Total 4 Marks

Question number	Answer	Notes	Marks
2 (a) (i)	total; internal; (reflection)	ACCEPT TIR for 2 marks 'total <u>refraction</u>' = 1, 'internal <u>refraction</u>' = 1 'total internal <u>refraction</u>' = 1 (list principle) 'reflection' alone = 0	1 1
(ii)	Any ONE of (Angle of) reflection ; θ > critical angle; 45° / 45 degrees / 45	ANSWER may be given on the DIAGRAM REJECT single letter 'r' REJECT θ = critical angle	1
(b)	Internal reflection at Y; Second internal reflection at lower right surface; Approximately correct reflections at both faces and emerging parallel (by eye); 	IGNORE any diagram arrows	3

Total 6 Marks

				e.g. – not realistic – 'have students stand 10m apart and time when they hear the sound...' 'use timers to measure the sound across a classroom'	
		ALTERNATIVE APPROACH – reference to speed = frequency x wavelength; indication of set up (e.g. signal generator and CRO); method to find wavelength (e.g. standing waves); method to find frequency (e.g. via timebase of CRO); additional relevant experimental detail;		If no indication of values given – e.g. 'spread out on the school field' then this mark is NOT accessible	
(c)	(i)	316 (±2) (m/s)			1
	(ii)	Speed of sound decreases with height; Idea of linear relationship /constant rate;		IGNORE 'inversely proportional' IGNORE '*(directly) proportional' ACCEPT 'negative correlation	2
	(iii)	Yes / Right (no mark) Aeroplane does not need to fly so fast (to make a sonic boom); Speed of sound lower (higher up) (ORA);		ACCEPT correct reference to graph, e.g. figures; IGNORE references to not being able to hear the boom from that high up IGNORE repetition from the stem – 'so it is easier for the plane to make a sonic boom' IGNORE all references to pressure/resistance/drag/friction/plane travels faster/	2

Total 11 Marks

Question number			Answer	Notes	Marks
12	(a)	(i)	light;		2
		(ii)	kinetic;		
	(b)	(i)	Power = energy ÷ time	power = energy ÷ time energy = power x time time = energy ÷ power ONLY ACCEPT standard letters (P, E, t)	1
		(ii)	Substitution into correct equation; Rearrangement; Calculation; e.g. 78 = energy ÷ 10 78 x 10 780 (J)	Correct final value gets all three marks irrespective of working. Substitution and rearrangement in either order. Rearrangement may be shown in (b)(i)	3
	(c)		Useful energy calculated; Correct substitution in formula; e.g. 200 – 176 OR 24 (J) 24 ÷ 200 (x 100 = 12%) ALTERNATIVE METHOD energy wasted = 176 ÷ 200 OR 88(%); useful energy transfer = 100 – 88 = (12%);	Second line of working scores 2 (since the use of 24 implies first line has been correctly carried out) Second line of working scores 2 (since the use of 88 implies first line has been correctly carried out)	2

Total 8 Marks