



Cambridge IGCSE™

PHYSICS

0625/62

Paper 6 Alternative to Practical

October/November 2021

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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This document consists of **12** printed pages.

Question	Answer	Marks
1(a)(i)	$l = 5.1$ (cm) and $w = 4.7$ (cm)	1
1(a)(ii)	$V = 95.88$ (cm ³)	1
1(a)(iii)	64 (g)	1
1(a)(iv)	ρ to 2 or 3 significant figures	1
	unit g / cm ³	1
1(b)(i)	estimate of V_1 given to the nearest cm ³ and $> \frac{1}{2}V < V$	1
1(b)(ii)	m_W numerically equal to V_1	1
1(c)(i)	d = candidate's (a)(iii) – (b)(ii) correct	1
1(c)(ii)	YES/NO and suitable comparison of d with m or m_W	1
1(d)	(float wood and) mark water level / remove and mark the water level	1
	measure submerged depth and multiply by the cross-sectional area	1
	OR	
	measure height of block that is not submerged	(1)
	multiply by the cross-sectional area then subtract from total volume of block.	(1)
	OR	
	use of a measuring cylinder / displacement can	(1)
	measure the volume of water displaced (by the floating block)	(1)

Question	Answer	Marks
2(a)(i)	$V_S = 1.8(0)$	1
	$I_S = 0.38$	1
2(a)(ii)	$R_S = 4.7$ (4.7368)	1
	units Ω , V, A seen	1
2(b)	$R_L = 4.86$ (Ω)	1
	to 2 or 3 significant figures	1
2(c)	symbols correct	1
	resistor and lamp in series, with voltmeter in parallel with both	1
2(d)	$R_C = 8.1$ (8.0952) (Ω)	1
2(e)	statement to match results – expect NO	1
	explanation of idea of beyond limits of experimental accuracy (e.g., values not close (enough)/too far apart/> 10% difference	1

Question	Answer	Marks
3(a)	$u/v = 0.25$	1
3(b)	axes correctly labelled with quantity and unit and right way round	1
	suitable scales with u axis starting at 15.0	1
	all plots correct to $\frac{1}{2}$ small square	1
	good line judgement, thin, continuous line	1
3(c)	method clearly shown on graph	1
	value correct to within $\frac{1}{2}$ small square	1
	Correct value for f – candidate's (c) $\div 2$	1
3(d)	to 2 or 3 significant figures	1

Question	Answer	Marks
3(e)	Read both parts of the answer together and award the marks in either order	
	deciding the screen position for most clearly focused image	1
	move screen slowly / backwards and forwards	1
	OR	
	the image is difficult to see	(1)
	carry out in a darkened room / away from bright lights	(1)
	OR	
	(metre) rule moving	(1)
	clamp rule / tape rule to bench	(1)
	OR	
	the image is (small and) difficult to focus	(1)
	use a bigger object	(1)
	OR	
	difficult to find the centre of the lens	(1)
	use a marked lens holder	(1)
	OR	
	object, (centre of) lens (and screen) are not at the same height above the bench	(1)
	use a ruler / set-square to check	(1)

Question	Answer	Marks
4	MP1 method names of at least three metals / named alloys suggested	1
	MP2 add loads / masses to test wire until it breaks	1
	MP3 repeat with the other metals	1
	MP4 repeat for each individual metal wire (and take an average)	1
	MP5 control variable diameter / cross-sectional area/thickness of the wire	1
	MP6 table columns for metal / wire and load / mass / weight, with unit	1
	MP7 conclusion compare breaking force / load / weight to metal OR plot a bar chart of metal and breaking force / load weight	1

Additional graph notes:

NOTE: The principle to apply here is 'could I draw a significantly better line, using these points, under examination conditions?' If the answer is definitely 'yes', do not award the mark.

NOTE: – If candidate's scale consists of actual readings at equal intervals this will produce a perfect straight line! The only mark available in this case is the first (axes right way round and labelled) So maximum 1.
– If axes are wrong way round, the other 3 marks are still available.