Cambridge Assessment International Education

Cambridge IGCSE™

PHYSICS **0625/62**

Paper 6 Alternative to Practical **May/June 2022**

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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[Turn over

Question	Answer	Marks
1(a)	explanation or diagram showing: equal readings either side of the 10 cm mark OR average of readings either side of the mark = 10	1
1(b)	71.2 – 50(.0)	1
	21.2	1
1(c)	axes correctly labelled with quantity AND unit AND the right way round	1
	suitable scales (filling ⩾ ½ the grid)	1
	five plots correct to ½ small square	1
	good line judgement, thin, continuous line	1
1(d)	triangle method clearly shown on graph, covering at least ½ of candidate's line between extreme plots	1
	G = 1.6–1.9 inclusive	1
1(e)	$R = G$	1
	R given to 2 or 3 significant figures	1

Question	Answer	Marks
2(a)	X marked anywhere in the series circuit	1
2(b)(i)	I_1 = 0.24 (A)	1
2(b)(ii)	V_1 = 2.2(0) (V)	1
2(c)	R_1 = 9.17 / 9.2 (Ω)	1

Question	Answer	Marks
2(d)(i)	R_C in parallel with resistors in series	1
	voltmeter across candidate's combination AND the rest of the circuit correct	1
2(d)(ii)	3.09 with unit Ω seen at least once in **(c) (d)** or **(e)** and not contradicted	1
2(e)	R_3 = 7.24 (Ω) to 2 or 3 significant figures	1
2(f)(i)	use of a voltmeter and/or an ammeter	1
	measure V and I for each resistor and calculate R OR connect each resistor to the same voltage supply and measure the current OR connect resistors in series and measure the voltage across each of them OR connect resistors in parallel and measure the current through them	1
2(f)(ii)	check to see if the results are equal / close / within 10%	1

Question	Answer	Marks
3(a)(i)	x = 7.5 cm, y = 2.0 cm and z = 5.5 cm	1
	all to nearest millimetre	1
3(a)(ii)	u = 20 and v = 55	1
3(a)(iii)	f = 14.6(6666667) (cm)	1
3(b)	working shown	1
	f_A calculation correct	1

Question	Answer	Marks
3(c)	any **two** from: use darkened room / bright(er) object move **lens** slowly (to find sharpest image) move **lens** back and forth (to find sharpest image) ensure that object, lens and screen are vertical object and (centre of) lens same height (above bench) perpendicular reading/viewing of the ruler scale mark the centre of the lens on its holder	**2**
3(d)(i)	any integer between 5 and 15 (inclusive)	**1**
3(d)(ii)	(a straight line) is a way of taking an average	**1**
	anomalous results can be seen (and repeated or ignored)	**1**

Question	Answer	Marks
4	**method:** **MP1** place disc between heated cylinder and metal cylinder / set up apparatus as shown in diagram	**1**
	MP2 measure the time for lower cylinder to reach a certain temperature (rise) / measure the temperature (rise) reached in a certain time.	**1**
	MP3 repeat with the other discs	**1**
	MP4, MP5 **key variables:** any **two** from: thickness of disc temperature of heated cylinder initial temperature of lower cylinder initial temperature of the disc voltage/current/power of heater time (of heating) (if temperature change is measured) OR temperature change (if time of heating is measured)	**2**
	MP6 **table:** table with columns for (material of) disc, time / temperature difference (depending on MP2) with units in the headings only	**1**
	MP7 **conclusion:** (draw a graph/bar chart to) compare temperatures reached (in a certain time) / heating times (for a given temperature rise) with the material of the insulator – the disc with the lowest (final) temperature (difference) / takes the longest time, is the best insulator	**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.