

Cambridge IGCSE™

PHYSICS

0625/62

Paper 6 Alternative to Practical

October/November 2024

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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Question	Answer	Marks
1(a)	$l = 7.5 \text{ (cm)}, w = 2.5 \text{ (cm)}, h = 1.3 \text{ (cm)}$	1
	all values to nearest millimetre	1
1(b)(i)	57.9 (g)	1
1(b)(ii)	2.3 (754)	1
	g / cm ³	1
1(c)(i)	N_1 correctly calculated (13.7857)	1
	answer given to the nearest integer rounded up or down (13 or 14)	1
1(c)(ii)	N_2 correct (11 or 12) (11.8181.)	1
1(d)	statement matches candidate's results	1
	10% difference calculation shown using candidate's values	1
1(e)	slides not all the same mass / weight / slides not all the same thickness / the tape adds to the mass / weight / height of the stack	1

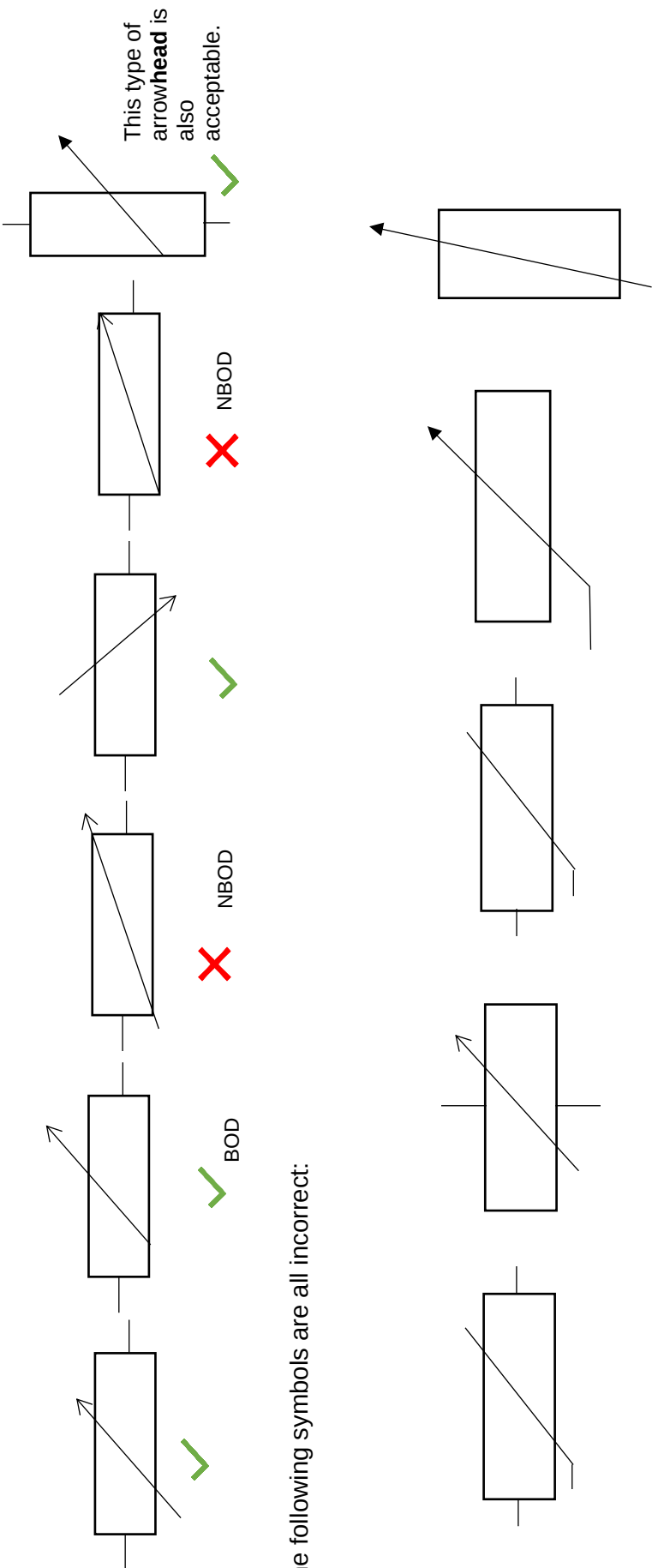
Question	Answer	Marks
2(a)(i)	correct voltmeter symbol	1
2(a)(ii)	voltmeter in parallel with the 220 Ω resistor 2.4 (V)	1
2(b)	$(I = 2.4 / 220 =) 0.0109 / 0.011$ (A)	1
2(c)	190 / 191 / 192 / 193 Ω or values rounding to these answer expressed to 2/3 significant figures	1
2(d)	2.5 / 2.51 / 2.508	1
2(e)	as the current decreases V_{LED} decreases (or reverse) and R_{LED} increases (or reverse)	1
2(f)(i)	symbol correct (See page 9 of this document for further guidance on tolerance for candidate answers for this question part).	1
2(f)(ii)	avoids connecting / disconnecting the circuit / can obtain a continuous set of values / easier (to change the current/resistance) / quicker / can obtain more values of resistance / current	1

Question	Answer	Marks
3(a)(i)	$d = 12.1$ (cm)	1
3(a)(ii)	60.5 (cm)	1
3(b)(i)	image is inverted / upside down and image is bigger / magnified	1
3(b)(ii)	3.0(25)	1
3(c)	axes labelled with units	1
	plots correct to $\pm 1/2$ small square	1
	good best-fit curve judgement, thin, continuous line	1
3(d)	method shown on graph	1
	candidate's value of v for $u = 30.0$ cm read correctly from the graph to $\pm 1/2$ small square	1
3(e)	f in the range 14.0 (cm) to 16.0 (cm) inclusive	1
3(f)	move <u>screen</u> slowly / to and fro (owtte) / carry out experiment in a darkened part of the laboratory / use a brighter object	1

Question	Answer	Marks
4	MP1 additional apparatus stopwatch and thermometer <u>and</u> ruler / measuring tape / callipers	1
	MP2 method time hot water (in beaker) cooling repeat using beakers of different diameter / size	1
	MP4 control variables one from: volume / mass of water <u>initial</u> temperature of the water / beaker time of cooling <u>or</u> the same temperature decrease	1
	MP5 results table columns for diameter / d and time / t or diameter / d and temperature / θ with correct units	1
	MP6 conclusion plot a graph of diameter vs time / plot a graph of diameter vs temperature (decrease) / plot a graph of diameter vs rate of cooling / plot graphs of temperature against time (for each beaker) / compare the results to see if / how the diameter affects the rate of cooling / compare the temperature decreases – largest decrease gives the greatest rate / compare the times – least time gives the greatest rate / calculate the rate of temperature decrease for each beaker and compare	1
	MP7 additional point (one from): another control variable stated at least five sets of data taken repeat each measurement <u>and</u> take an average	1

Q2(f)(i) Symbol for variable resistor:

The box must be a rectangle, not a square.
The arrow must lie tilted between the longer sides. It doesn't matter which way it tilts, or which way up it is.
The arrowhead must emerge from the longer side. The tail of the arrow must at least reach the opposite side of the rectangle, but do not penalise if it stops there.
The two lines showing connection to the rest of the circuit are not required but if present must be correct.



The following symbols are all incorrect: