

IGCSE Physics 0625 Paper 5 Practice Paper

(Core) - ANSWERS

Total: 40 marks · 1 hour 15 minutes · 4 questions · 20 parts

Part	Answer	Marking points	Marks
1(a)	A metre rule; the eye must be level with the scale to avoid parallax.	1 mark: metre rule.	1
1(b)	Extension = length - 12.0, giving 2.0, 4.0, 6.0 and 8.0 cm.	1 mark: method (length minus 12.0). 1 mark: all four values correct.	2
1(c)	Extension 8.0 cm = 0.080 m; $k = F/e = 4.0 / 0.080 = 50 \text{ N/m}$.	1 mark: converts 8.0 cm to 0.080 m. 1 mark: substitutes into $k = F/e$. 1 mark: answer 50 N/m with unit.	3
1(d)	k is constant: extension = $5.0 / 50 = 0.10 \text{ m} = 10.0 \text{ cm}$, so total length = $12.0 + 10.0 = 22.0 \text{ cm}$.	1 mark: extension 10.0 cm. 1 mark: total length 22.0 cm.	2
1(e)	Read the scale with the eye level with the mark (no parallax); add loads gently and stay within the elastic limit; record the natural length before loading. Any two.	1 mark: avoid parallax / eye level with the scale. 1 mark: stay within the elastic limit / add loads gently.	2
2(a)	A stopwatch (timer), smallest reading 0.1 s.	1 mark: stopwatch.	1
2(b)	$T = 36.0 / 20 = 1.8 \text{ s}$; $f = 1 / 1.8 = 0.56 \text{ Hz}$.	1 mark: $T = 1.8 \text{ s}$. 1 mark: $f = 0.56 \text{ Hz}$ (accept 0.556).	2
2(c)	Rearranged: $g = 4\pi^2 l / T^2$; substitution gives $g = 4\pi^2 \times 0.800 / 1.8^2 = 31.6 / 3.24 = 9.75 \text{ m/s}^2$.	1 mark: correct rearrangement $g = 4\pi^2 l / T^2$. 1 mark: substitutes 0.800 and 1.8^2 . 1 mark: answer 9.7-9.8 m/s ² .	3
2(d)	$T = 31.0 / 20 = 1.55 \text{ s}$; when the length is reduced the period decreases ($1.55 \text{ s} < 1.8 \text{ s}$).	1 mark: $T = 1.55 \text{ s}$. 1 mark: period decreases as length decreases.	2

2(e)	Time 20 oscillations rather than one and divide; repeat and average; use a fiducial mark at the lowest point of the swing. Any two.	1 mark: time many oscillations in total. 1 mark: repeat and average / fiducial mark at the centre.	2
3(a)	In parallel with the resistor.	1 mark: in parallel.	1
3(b)	$R = V/I = 4.8 / 0.40 = 12.0 \, \Omega$.	1 mark: uses $R = V/I$. 1 mark: answer $12.0 \, \Omega$.	2
3(c)	Working each pair: $2.4/0.20 = 12.0$, $3.6/0.30 = 12.0$, $4.8/0.40 = 12.0$ and $6.0/0.50 = 12.0 \, \Omega$, so the resistance is constant and the component is ohmic.	1 mark: any two pairs correct. 1 mark: all four pairs give $12.0 \, \Omega$. 1 mark: constant resistance, so it is ohmic.	3
3(d)	$P = VI = 6.0 \times 0.50 = 3.0 \, \text{W}$.	1 mark: uses $P = VI$. 1 mark: answer $3.0 \, \text{W}$.	2
3(e)	Current heats the resistor, which changes its resistance and spoils the V-I relationship, and it avoids overheating the component.	1 mark: prevents the resistor heating up. 1 mark: heating changes resistance / damages the component.	2
4(a)	A balance (electronic balance), reading to $0.1 \, \text{g}$.	1 mark: balance.	1
4(b)	Volume = $60.0 - 50.0 = 10.0 \, \text{cm}^3$.	1 mark: method (final minus initial). 1 mark: answer $10.0 \, \text{cm}^3$.	2
4(c)	Density = $78.0 / 10.0 = 7.8 \, \text{g/cm}^3$, which is $7.8 \times 1000 = 7800 \, \text{kg/m}^3$.	1 mark: uses density = mass / volume. 1 mark: $7.8 \, \text{g/cm}^3$. 1 mark: $7800 \, \text{kg/m}^3$.	3
4(d)	Maximum error = $1 / 10.0 \times 100\% = 10\%$; the density is calculated from the same readings, so it also carries about 10% error.	1 mark: 10%. 1 mark: the density is also uncertain by about 10%.	2
4(e)	Lower the block slowly on a thin thread to avoid splashing and air bubbles; read the bottom of the meniscus with the eye level; repeat and average. Any two.	1 mark: avoid splashing / bubbles (lower slowly). 1 mark: read at eye level with the meniscus / repeat readings.	2