Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Measurement And Their Errors

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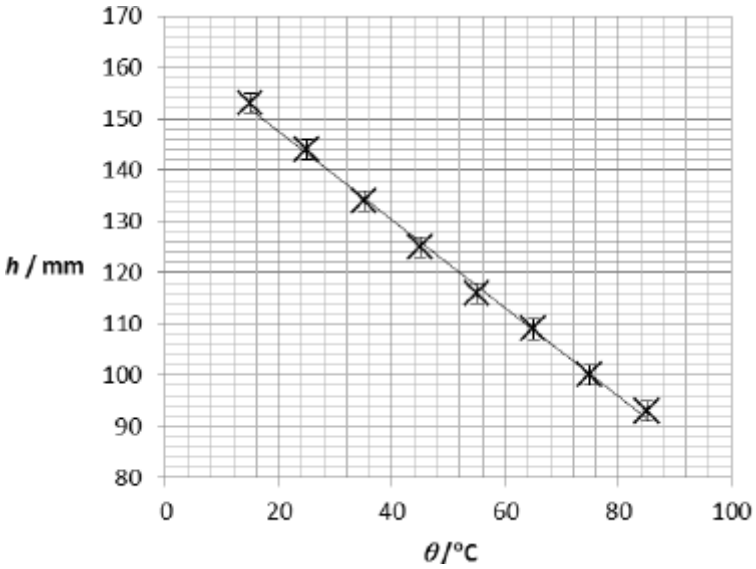
Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Mark Schemes

Q1.

(a) Straight line of best fit passing through all error bars ✓



Look for reasonable distribution of points on either side

1

(b) $h_0 = 165 \pm 2$ mm ✓

1

(c) Clear attempt to determine gradient ✓

1

Correct readoffs (within ½ square) for points **on line** more than 6 cm apart and correct substitution into gradient equation ✓

1

$h_0 k$ gradient =(-) 0.862 mm K^{-1} and
negative sign quoted ✓

Condone negative sign
Accept range -0.95 to -0.85

1

(d) $k = \frac{\text{candidate value for } h_0 k}{\text{candidate value for } h_0}$

$= 5.2 \times 10^{-3}$ ✓

Allow ecf from candidate values

K^{-1} ✓

Accept range 0.0055 to 0.0049

1

(e) for h = 8000 mm, $d^{-1} = \frac{8000}{14.5}$ ✓

1

$d = 1.8 \times 10^{-3}$ mm ✓

1

(f) Little confidence in this answer because
One of
It is too far to take extrapolation ✓
OR
This is a very small diameter ✓

1

[10]

Q2.

(a) 6.5×10^{10} Pa ✓

1

(b) $kg\ m^{-1}\ s^{-2}$ ✓

1

(c) Direction of movement of particles in transverse wave perpendicular to energy propagation direction ✓

1

Parallel for longitudinal ✓

1

(d) $\rho_1 c_1 = \rho_2 c_2$ ✓

$E = \rho c^2$ or $\rho c = \frac{E}{c}$ seen

1

$\left[\frac{E_1}{c_1} = \frac{E_2}{c_2}\right]$

1

(e) $[\frac{\rho_x}{\rho_y} = \frac{c_y}{c_x}$ and $c_x = 2c_y]$

0.5 ✓

1

(f) speed of the wave in seawater is less than speed of the wave in glass ✓

1

argument to show that ${}_{water}n_{glass} < 1$ ✓

1

so tir could be observed when wave moves from water to glass ✓

1

[10]

Q3.

(a) Peak power = 107 / 108 mW and load resistance = 290 / 310 Ω ✓

1

Use of power = I^2R with candidate values ✓

1

0.0186 – 0.0193 A ✓

1

(b) energy of one photon = $\frac{hc}{\lambda}$ = 4.0 ×10^{-19}J ✓

1

Number of photons = $\frac{730 \times 36 \times 10^{-4}}{4.0 \times 10^{-19}}$ = 6.6 × 10^{18} s^{-1} ✓

1

[5]