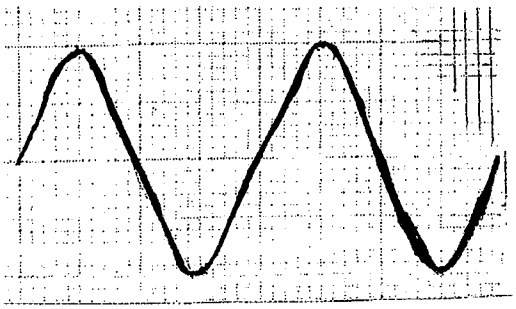
(b) (i) height = 4cm
peak value = 4 x 5
= 20V *(2 marks)*

(ii) 2 wavelength = 16cm
T = $8 \times 20 \times 10^{-3}$
= 0.16s

$$f = \frac{1}{T} = \frac{1}{0.16}$$

$= 6.25\ H_z$ *(3 marks)*

(iii)



(2 marks)

24.5.3 Physics Paper 3 (232/3)

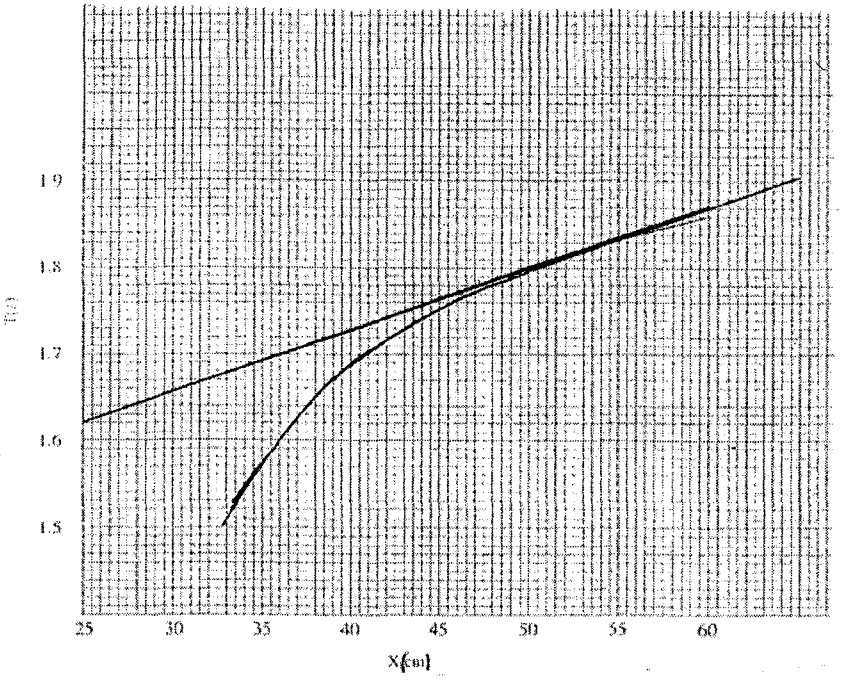
1.

(c)

Distance x (cm)	35	40	45	50	55	60
Time t for 20 Osc(s)	31.8	33.8	35	36	36.8	37.2
Period $T = \frac{t}{20}(s)$	1.59	1.69	1.75	1.8	1.84	1.86

(8 marks)

(d)



(5 marks)

(e) Slope: tangent at x = 52cm

$$\frac{\Delta T}{\Delta x}$$

$$S = 6.7 \times 10^{-3}$$ *(3 marks)*

(f) $$n = 52 \times \left(6.7 \times 10^{-3}\right)^2$$

$$= 2.33 \times 10^{-3}$$ ***(2 marks)***

(g) $$P = \frac{\pi^2}{4 \times 2.33 \times 10^{-3}}$$

$$= 1.05 \times 10^{3}$$ *(2 marks)*

2.

(b) (i) E = 3.1 volts ***(1 mark)***

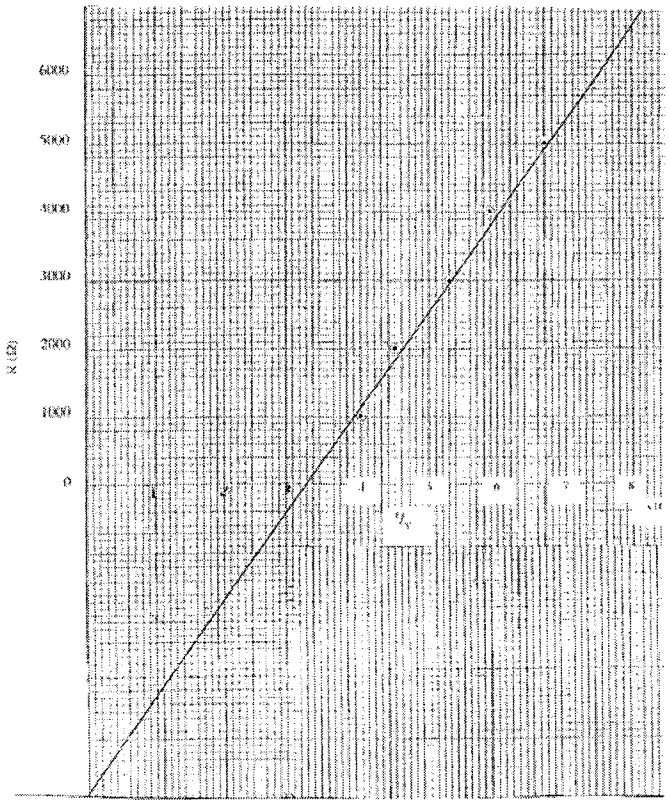
(c)

For range 0 – 5v

R(Ω)	1000	2000	3000	4000	5000	6000
V	2.5	2.2	1.9	1.7	1.5	1.3
V^{-1}	0.4	0.45	0.53	0.59	0.67	0.77

(6 marks)

(d)



(e) $\text{Slope} = \dfrac{\Delta R}{\Delta \dfrac{1}{v}}$

$= \dfrac{10.5 \times 1000}{0.75} = 14000$ ***(3 marks)***

(f) $G = \dfrac{14000}{3.1} = 4.5x10^{3}\,\Omega$ ***(2 marks)***

(g) (i) $\dfrac{1}{V} = 0.32 (when\ R = O)$

$V_o = 3.1$ ***(1 mark)***

(ii) $R_g = 4.5x10^{3}\,\Omega.$ ***(1 mark)***

(iii) $\dfrac{G}{R_g} = \dfrac{4516x10^{3}}{4.5x10^{3}}$

$= 1.003$ ***(1 mark)***