

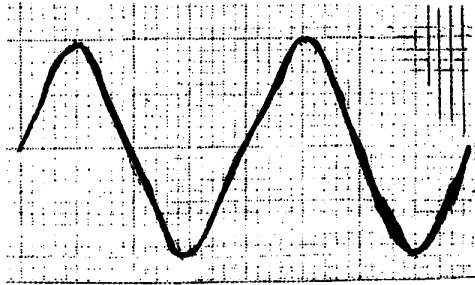
(b) (i) height = 4cm  
 peak value =  $4 \times 5$   
 = 20V (2 marks)

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

$$f = \frac{1}{T} = \frac{1}{0.16} = 6.25 \text{ Hz}$$

(3 marks)

(iii)



(2 marks)

### 24.5.3 Physics Paper 3 (232/3)

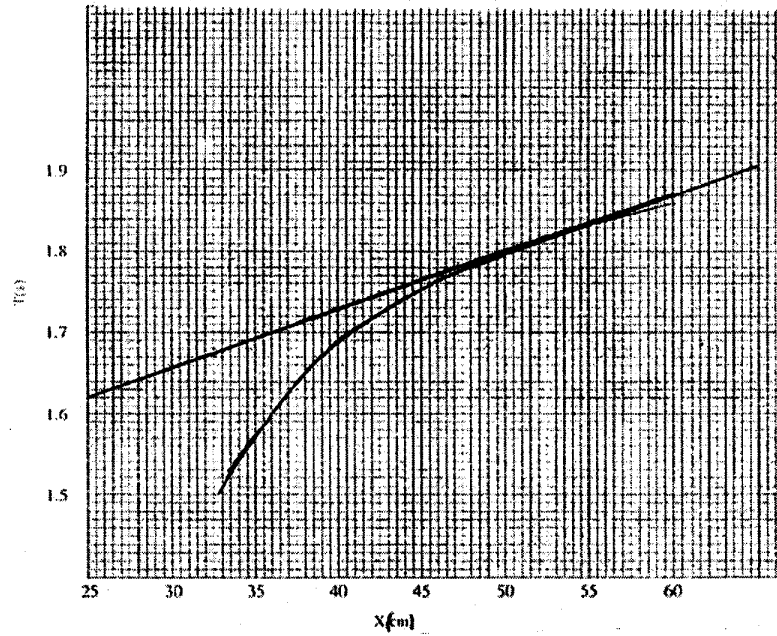
1.

(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  $x = 52\text{cm}$

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

$$\Delta x$$

$$S = 6.7 \times 10^{-3}$$

(3 marks)

(f) 
$$n = 52 \times (6.7 \times 10^{-3})^2$$
$$= 2.33 \times 10^{-3}$$

(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

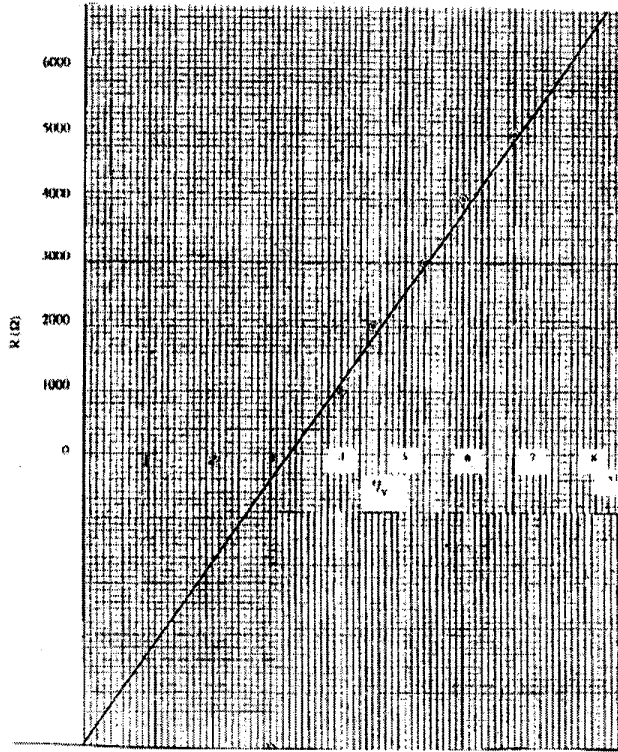
(1 mark)

(c) For range 0 – 5v

R( $\Omega$ )	1000	2000	3000	4000	5000	6000
V	2.5	2.2	1.9	1.7	1.5	1.3
V <sup>-1</sup>	0.4	0.45	0.53	0.59	0.67	0.77

(6 marks)

(d)



(e) 
$$\text{Slope} = \frac{\Delta R}{\Delta \frac{1}{v}}$$
$$= \frac{10.5 \times 1000}{0.75} = 14000 \quad (3 \text{ marks})$$

(f) 
$$G = \frac{14000}{3.1} = 4.5 \times 10^3 \Omega \quad (2 \text{ marks})$$

(g) (i) 
$$\frac{1}{V} = 0.32 \text{ (when } R = 0)$$

$$V_0 = 3.1 \quad (1 \text{ mark})$$

(ii) 
$$R_g = 4.5 \times 10^3 \Omega \quad (1 \text{ mark})$$

(iii) 
$$\frac{G}{R_g} = \frac{4516 \times 10^3}{4.5 \times 10^3}$$
$$= 1.003 \quad (1 \text{ mark})$$