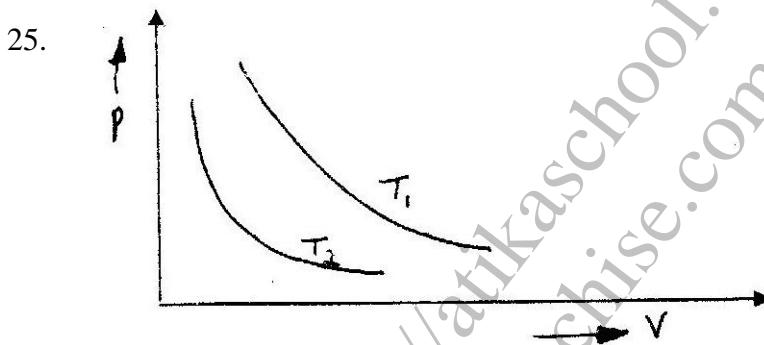


19. In TV (CRT) deflection is by magnetic field, while in CRO deflection is by electric field. X-Y plates.
 In TV (CRT) has two time bases while a CRO has only one.
 In CRT it produced 625 lines per second while CRO is 25 lines per second.
20. Heating/ cooking/communication/eye/photographic film or plate/LDR/photocell.
21. Diode is forward-biased, no current flows
 Current flows when the switch is closed but when terminals are reversed, no current flows
22. Angle of inclination/nature of surface/length of inclination
 Height of inclination/frictional force between the surface.
23. layers of the crystal material are arranged according to faces/ plans/ flat surfaces.
 Cleavage is only possible parallel to those faces/planes/flat surfaces.
24. Principles of moment.
 $200 \times 1.5 R \times 0.5$, $0.5f = 1 \times 20 \times 10$ or $0.5, R = 600$. $R = F + 200 = 400N$ take moments about O
 $F = 600 - 200 = 400N$
 $F = 400N$



26. Addition of impurities with higher boiling points/presence of impurities. Water heated under a higher pressure than atmospheric/below sea level.
27. Moon covers the sun/obstruction of sun by the moon
 Both heat and light have same velocity/both are electromagnetic waves.
28. Overtones/harmonics
29. Since $F = MV^2/V$ the sharper the corner (as B) the smaller the value of R hence the greater the F. (M & V constant).
30. Gas through the nozzle gains velocity. Hence its pressure reduces above the nozzle. The higher atmospheric pressure pushes air into the gas stream.
31. When mercury is heated (during a fire); it expands and makes contact, completing the circuit to ring the bell.
32. There will be no variation of intensity of light/ uniform intensity/no bands/one
33. Is the one which cannot form on a screen Is formed by rays which are not real
 Is formed by extending rays. Formed by apparent rays.
34. Component of weight down the slope = $50 \sin 30^\circ = 25N$
 Total force parallel to slope = $(29 + 25) N = 54N$.

From above $u = 30\text{m/s}$

$$S = ut + \frac{1}{2} at^2$$

$$T = ut + \frac{1}{2} at^2$$

$$T = 6 \quad D = vxt = 50 \times 6 = 300\text{cm}$$

- (bi) Measure pressure with Bourdon gauge
Measure the length of air (reg volume at tone).

- (ii) Tabulation values of p and length of air column (volume)
Plot graph of I/V vs P OR L vs I/P

Graph is a straight line.

Hence $p \propto I/v$

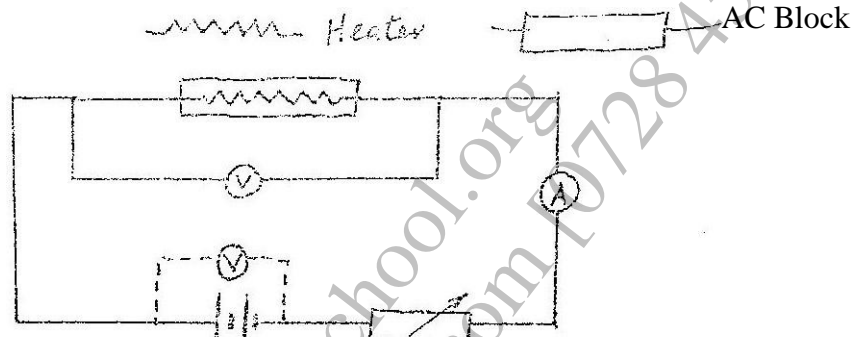
Tabulate P and $V(I)$

Calculate PV or PL

$$PV(I) = PL$$

Hence $P \propto 1/v$

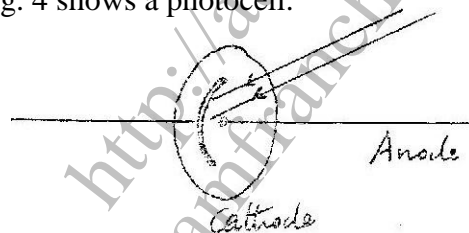
4. a) i)



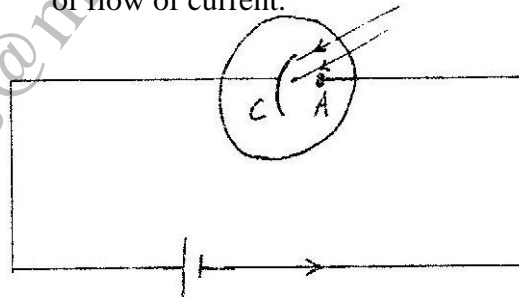
- (ii) Voltage, current, time

(iii) $Q/v/t$ Rate = $Q/t = v/tT$ (T = time taken for sun to heat)

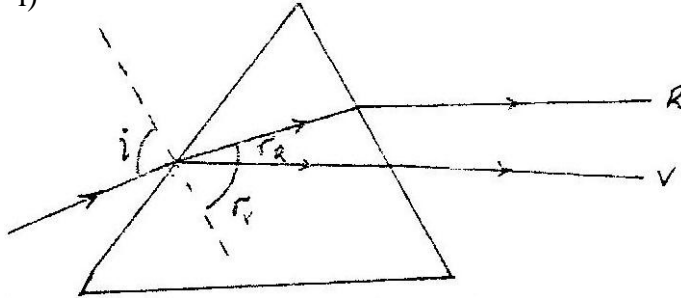
- b) Fig. 4 shows a photocell.



- ii) When light rays strike cathode C surface electrons gain photon (energy) hence the cathode.
iii) Draw a simple circuit including the photocell to show the direction of flow of current.



5 a) i)



- ii) Since $\sin i$ is common and $r < r_e$ then $\sin r_v < \sin r_e$
 b) $n \sin C = 1$ OR $\sin C = 1/n$
 $\sin C = 1/1.4$ $C = 45.600$ (45.58) or 45.35 min/45.36

SECTION II

- 6 a) When T and Y are connected C is charged by E, until C achieves same p.d. across it as for E C max p.d is achieved when T and Y are connected after first process. C acts, as source of e.m.f and discharges through r unit no more current flow or current is zero.

b) Current = dQ draw target at 30. Substitution $I = 3.6\mu A \pm 0.2A$.

- 7a) 2 complete rays, 2 with arrow at one end image (inverted real) (continuous tie) locating F size $2.4 \pm 0cm$

b)

| | | | | | | |
|-------------------------------|------|-------|-------|-------|-------|-------|
| U (cm) | 20 | 25 | 30 | 40 | 50 | 70 |
| V(cm) | 20 | 16.7 | 15 | 13.3 | 12.5 | 11.6 |
| $\frac{1}{V}(\text{cm}^{-1})$ | 0.50 | 0.040 | 0.033 | 0.025 | 0.020 | 0.014 |
| $\frac{1}{V}(\text{cm}^{-1})$ | 0.50 | 0.060 | 0.067 | 0.075 | 0.080 | 0.086 |

- ii) $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ Intercept $\frac{1}{f}$
 $0.1 = 1/f$ $\therefore f = 10cm$