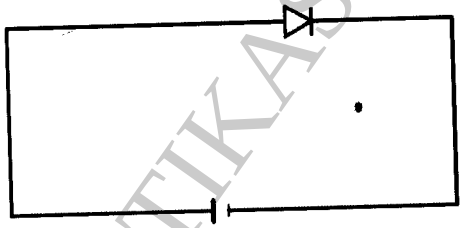
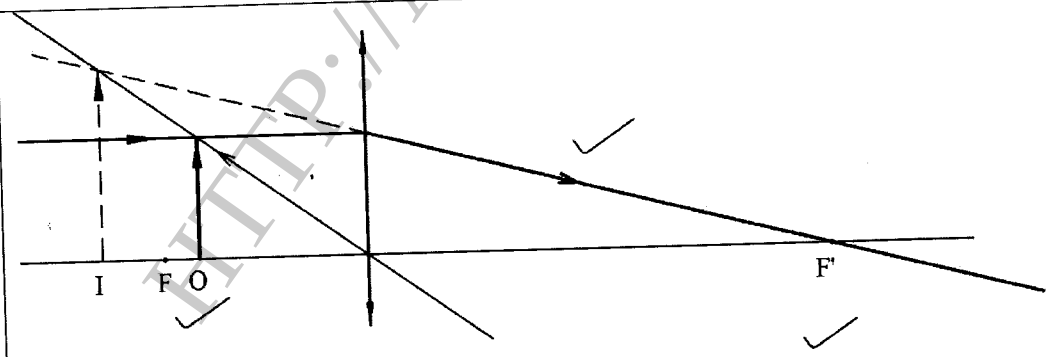
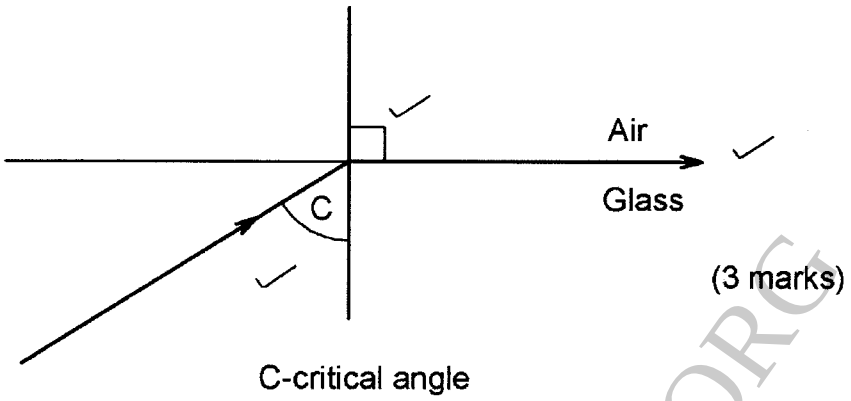
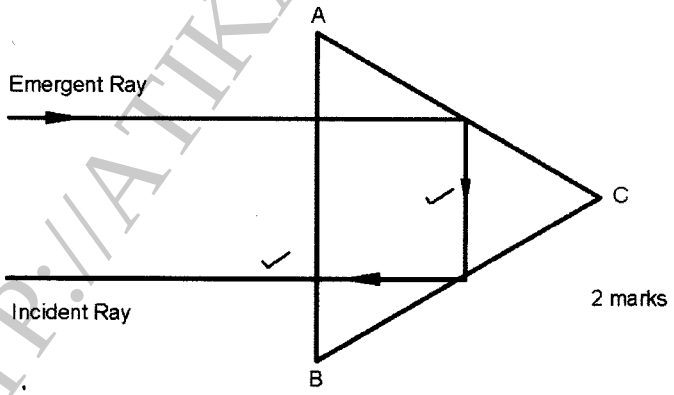
4.6.2 Physics Paper 2 (232/2)

SECTION A (25 marks)

1.	– Cooking/warming/heating – Communication / Radar/ measure distances	(2 marks)
2.	Magnetic – Nickel, cobalt Non-magnetic – Tin, copper	(2 marks)
3.	Measuring distances/ speed of sound.	(1 mark)
4.	Polarization is the formation of hydrogen gas at the positive terminal of the cell.	(1 mark)
5.	– Have a wide/wider field of view. – Form upright images.	(2 marks)
6.	A – South pole	(1 mark)
7.	The light passes through the walls and gets absorbed by the soil, emitting energy of longer wavelengths which cannot penetrate the walls hence get trapped within the green house causing heating.	(2 marks)
8.		(1 mark)
9.	 -Rays must have direction -Virtual rays dotted	(3 marks)

10.	${}^{A}_{z}X = {}^{A}_{z+1}Y + {}^{o}_{-1}\beta$	(1 mark)
11.	– The leaf falls – Charge is induced on the sphere causing repulsion of electrons to the leaf hence leaf falls.	(3 marks)
12.	T = 20 s $f = \frac{1}{T} = \frac{1}{20}$ = 0.05 Hz	(2 marks)
13.	$V_T = V_1 + V_2 + V_3$ from ohm's law V = IR therefore $I_T R_T = I_1 R_1 + I_2 R_2 + I_3 R_3$ but $I_1 = I_2 = I_3 = I_T$ since they are in series $\frac{IR_T}{I} = \frac{I}{I}(R_1 + R_3 + R_3)$ $R_T = R_1 + R_2 + R_3$	(3 marks)
14.	Conversion of the Kinetic energy of the electrons into heat energy/ Conversion of electrical energy to heat	(1 mark)

SECTION B (55 Marks)

15.	a)  C – critical angle	(3 marks)
	b) (i) $n = \frac{1}{\sin c}$ $\text{Sin c} = \frac{1}{n} = \frac{1}{1.62}$ $C = 38.1^{o}$	(3 marks)
	(ii)  	(2 marks)
	c) - Dispersion of white light - In periscopes - In Binoculars - In telescopes **(Any 2)**	(2 marks)

16.	a) i. Radiations cause photo electrons to be ejected from the metal surface (cathode), the electrons are attracted by the anode hence current flows.	(2 marks)
	ii. Use a radiation of higher intensity Source is made moved closer/ increase anode voltage/accelerating voltage.	(2 marks)
	iii. The frequency of the incident radiation is below the threshold frequency of the surface hence no emission can take place.	(2 marks)
	b) (i) $W_\circ = hf_\circ$ $= 6.63\times10^{-34}\times5.5\times10^{14}$ $= 3.647\times10^{-19}$	(3 marks)
	ii. $hf = hf_\circ + K.E$ $K.E = \frac{hc}{\lambda} - W$ $= \frac{6.63\times10^{-34}\times3.0\times10^{8}}{4.5\times10^{-7}} - 3.647\times10^{-19}$ $= 4.42\times10^{-19} - 3.647\times10^{-19}$ $= 7.73\times10^{-20}J$	(4 marks)
17.	a) i. A momentary deflection is observed, Conductor cuts the field. An emf is induced in AB Causing current in the circuit	(3 marks)
	ii. A bigger deflection is observed/ higher current	(1 mark)

	b) (i) $\frac{V_p}{V_s} = \frac{N_p}{N_s}$ $N_s = \frac{600}{240} \times 12$ $= 30 turns$	(3 marks)
	(ii) $\frac{N_p}{N_s} = \frac{I_s}{I_p}$ $I_p = \frac{30 \times 0.5}{600}$ $= 0.025 A$	(3 marks)
18. (a)	– Area of overlap of the plates – Distance between the plates. – Type of dielectric. **(Any 2)**	(2 marks)
(b)	i. $\frac{1}{C_T} = \frac{1}{C_1} + \frac{1}{C_2}$ $= \frac{1}{4} + \frac{1}{8} = \frac{2+1}{8} = \frac{3}{8}$ $C_{T1} = \frac{8}{3} = 2.67\ \mu F$ C=6 + 2.67= 8.67 μF	(4 marks)
	ii. Qin series section Q = CV =2.67 × 4.0 =10.68C $Q(4\mu F) = 10.68$	(3 marks)

19.	a) (i) B_1 – y deflecting plates B_2 – x deflecting plates	(2 marks)
	(ii) Grid; controls the intensity by controlling the number of electrons reaching the screen. If made more negative less electrons pass through.	(3 marks)
	b) T= 8 X 20 ms^{-1} = 160 = 0.16 s $F = \frac{I}{T}$ $= \frac{1}{0.16} = 6.25Hz$	(4 marks)
	,c) Tungsten has a high melting point. It can with stand high temperatures.	(2 marks)