

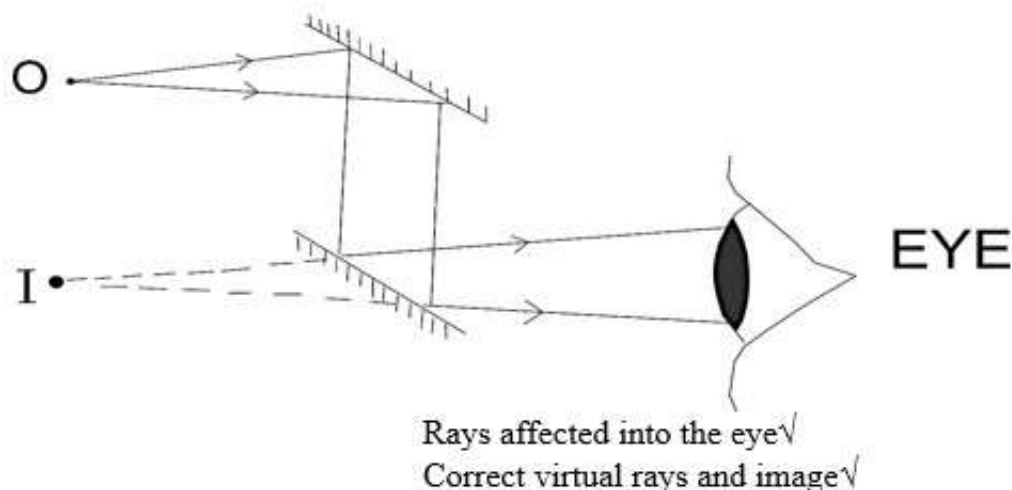
FORM FOUR CLUSTER KCSE MODEL5

PHYSICS PAPER 2 ANSWERS

SECTION A (25 Marks)

Answer all the questions

1.



2. Negative. ✓

3. -Large currents can be drawn without ruining cells. ✓

-Stay is discharged condition for a long time before cells are ruined. ✓

-They require little attention to maintain/robust/rugged.

-They are lighter than lead acid accumulators

4. P-South. ✓

Q-south✓

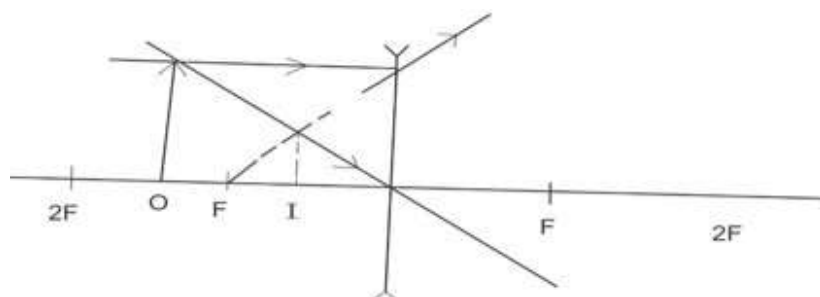
5.

$$V = \lambda f$$

$$3.0 \times 10^8 = 5.0 \times 10^6 \lambda \quad \checkmark \checkmark \checkmark$$

$$\lambda = 60m$$

6.

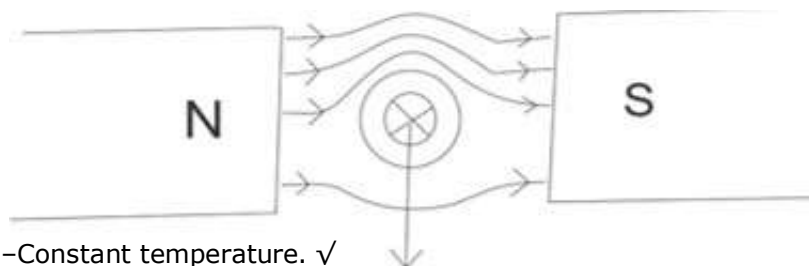


Any 2 rays✓ correct position of object

7.

$$\begin{aligned}
 Q &= It \\
 &= 2.5 \times 1.5 \times 60 \\
 &= 225C
 \end{aligned}$$

8. a.c is stepped up for long distance distributed. ✓ 9.



10. -Constant temperature. ✓

-Uniform cross section/constant length/constant mechanical stress.

11. As the magnetizing current increases, the dipoles get aligned to face the same direction increasing the attractive force and once all domains are aligned the attractive force remains constant

12. -Produce diminished images. ✓

- Images appear further away than actual objects.

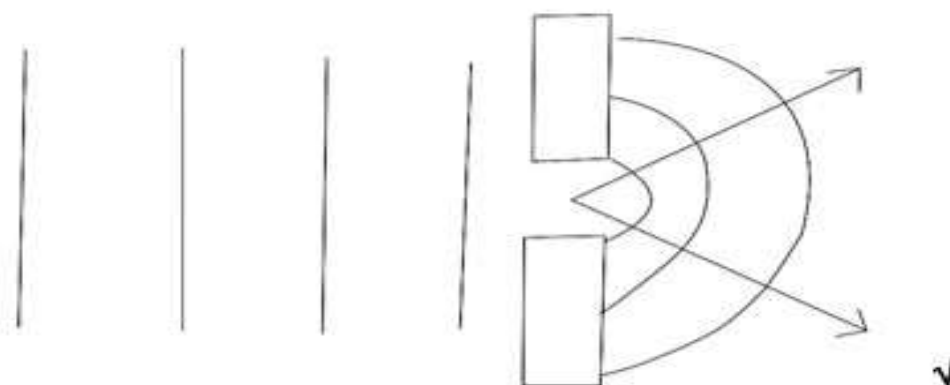
13. B-long wavelength /faster speed of the wave. ✓

SECTION B (55 Marks)

Answer all questions

14.

(i)



(ii)

I
II

Waves are not diffracted. ✓

Waves undergo more diffraction/more curved. ✓

15.

(a) (i) $122 - 90 = 32^\circ$

(ii) $n = \frac{\sin r}{\sin i}$

$= \frac{\sin 60}{\sin 32}$

$= \frac{0.8660}{0.5299}$

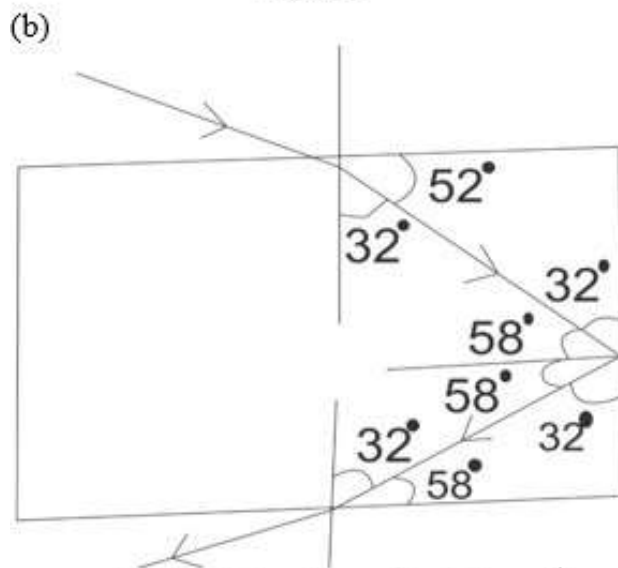
$= 1.634$

(iii) $\sin C = \frac{1}{n}$

$$c = \sin^{-1} \frac{1}{1.634}$$

$$= \sin^{-1} 0.6120$$

$$= 37.73^\circ$$

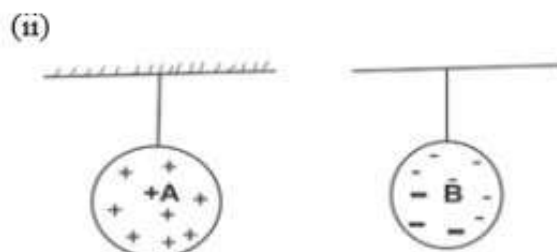
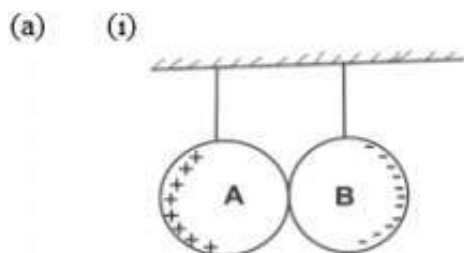


Totally internally reflected ray ✓

Emerging ray ✓

Angles correctly indicated ✓

(c) Monochromatic light is light of single colour



Even distribution of charges

(b) (i) $\frac{1}{C_T} = \frac{1}{C_1} + \frac{1}{C_2}$

$$\frac{1}{C_T} = \frac{1}{3\mu F} + \frac{1}{6\mu F}$$

$$C_T = 2\mu F$$

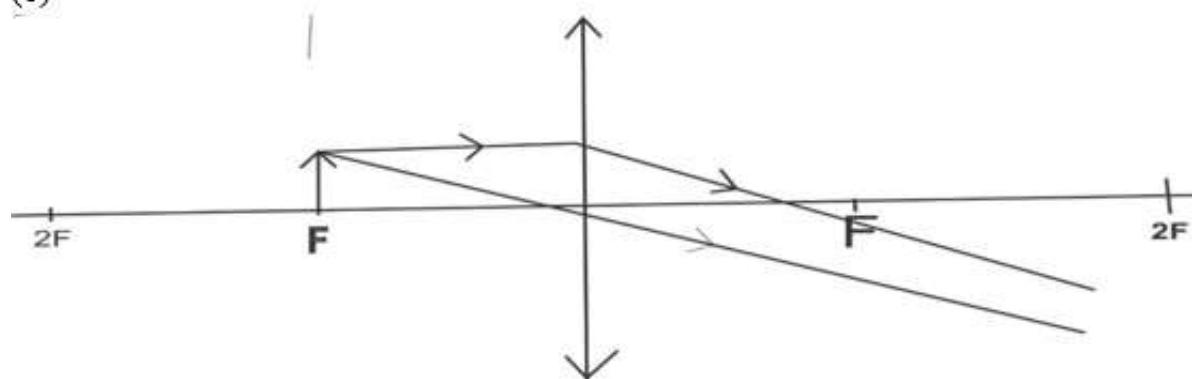
(ii) $Q = C_T V$
 $= 2 \times 10^{-6} \times 10$
 $= 2.0 \times 10^{-5} C$

(iii) $2.0 \times 10^{-5} C$

- (c)
- Area of overlap.
 - Type of dielectric material.
 - Distance of separation.

(a) Distance between the optical centre and the principle focus.

(b)



Parallel rays forming image at infinite

(c) (i) I
$$\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$$

$$\frac{1}{20} + \frac{1}{v} = \frac{1}{5}$$

$$v = 6.667 \text{ cm}$$

II
$$m = \frac{v}{u}$$

$$\frac{6.667}{20}$$

$$= 0.333$$

- (ii) -Diminished.
 -Real.
 -Inverted.

18.

- (a) To reduce power losses ✓ since high voltage implies low current thus less heating according to $P = I^2 R$
- (b) (i) I Ring circuit. ✓
 II A-Neutral. ✓
 B-Live. ✓
- (ii) R is connected to B and not A to ensure that when it breaks the circuit, no device remains live.
- (iii) Fuse. ✓
- (iv) Earthing guards against electric shocks. ✓
- (c) (i) $I = \frac{P}{V}$ ✓
 $\frac{1800}{240} = 7.5A$ ✓
- (ii) $pt = M\omega C\omega\theta + \zeta\theta$
 $1800t = 54 \times 4200 \times 70 + 9000 \times 70$ ✓
 $t = 9170 \text{ sec s (2.55hrs)}$

$$\text{Total cost} = 2.55 \times 30 \times 1.8 \times 6.70 \text{ ✓}$$

$$= 922.60 \text{ sh}$$

- (a) (i) 30cm. ✓
 (ii) $T = 30 - 10 = 20 \text{ sec.}$ ✓
 $f = \frac{1}{T}$ ✓
 $= \frac{1}{20}$ ✓
 $= 0.05Hz$ ✓

