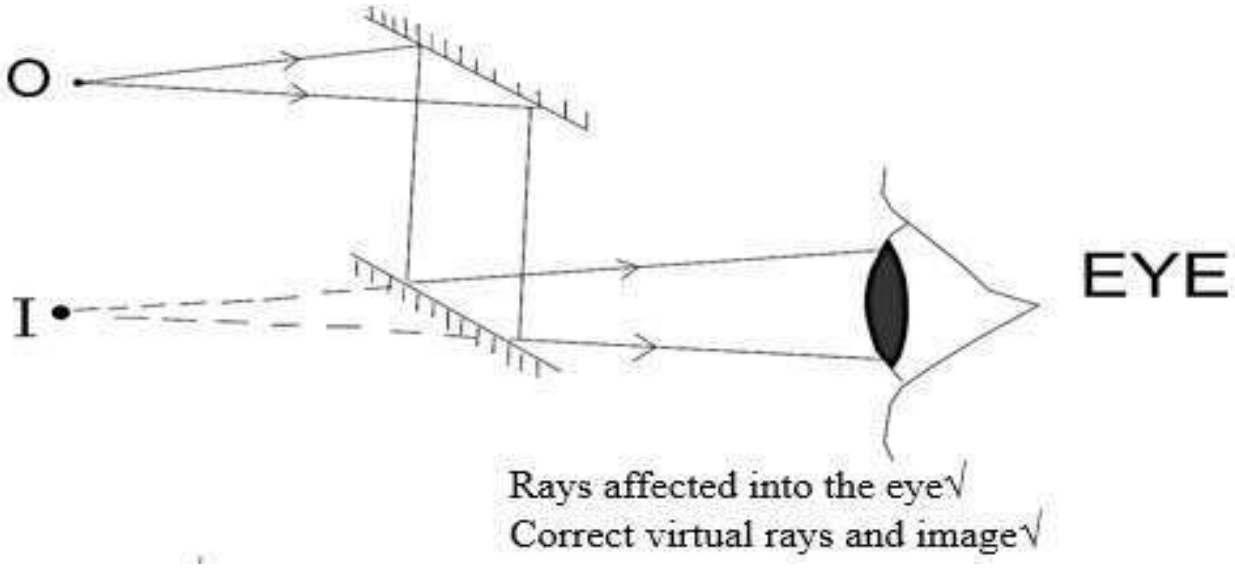
FORM FOUR CLUSTER KCSE MODEL 4

PHYSICS PAPE 2 ANSWERS

SECTION A (25 Marks)

Answer all the questions in this section in the spaces provided



Rays affected into the eye√
Correct virtual rays and image√

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

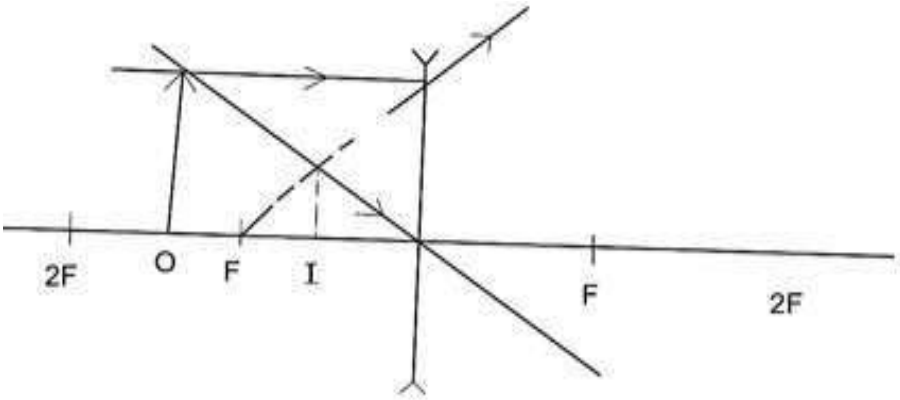
-They are lighter than lead acid accumulators. (any 2x1=)

4. P-South. √ Q-south√

$V = \lambda f$

$3.0 \times 10^8 = 5.0 \times 10^6 \lambda$ √√√

$\lambda = 60m$



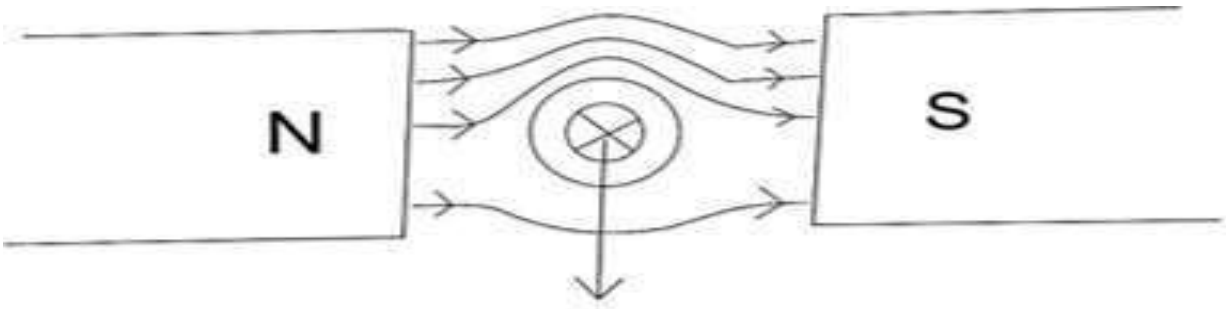
Any 2 rays√ correct positon of object

$Q = It$

$= 2.5 \times 1.5 \times 60$ √√

$= 225C$

8.a.c is stepped up for long distance distributed. √



√ Correct field with arrows/direction
√ Correct direction

10. -Constant temperature. √

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

11. As the magnetizing current increases, the dipoles get alligned√to face the same direction increasing the attractive force and once all domains are aligned the attractive force remains constant (any 1x1=1)

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

(a) (i) 30cm. √

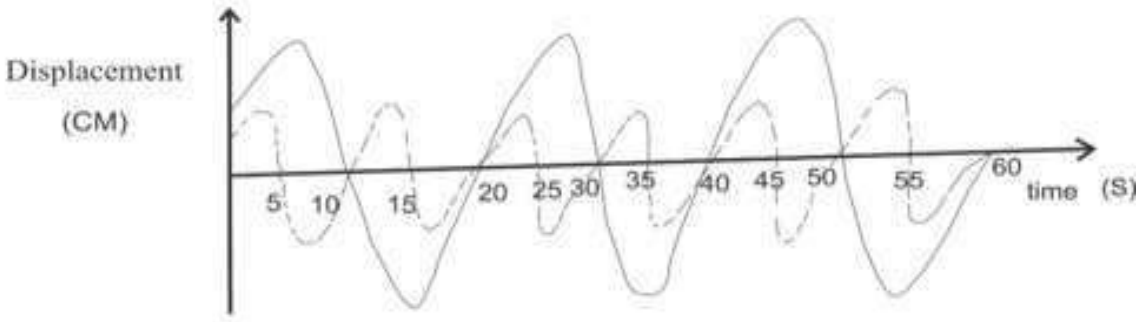
(ii) $T = 30 - 10 = 20$ sec. √

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

$$= \frac{1}{20} \surd$$

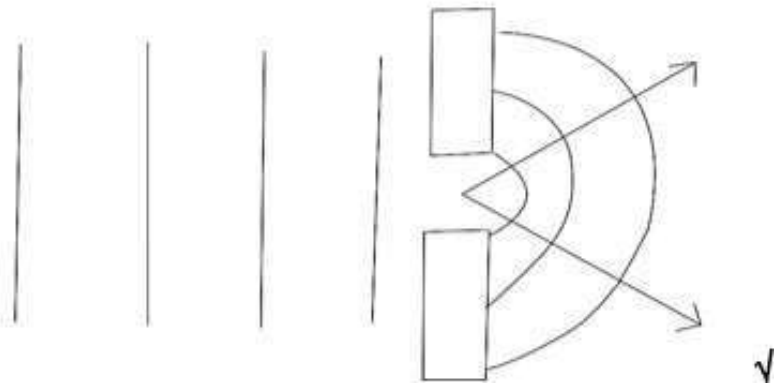
$$= 0.05Hz \surd$$

(iii)



Correct frequency√
Correct amplitude √
(at least two complete cycles)

(b) (i)



√

(a) (i) $122 - 90 = 32^0$

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

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

$= \frac{0.8660}{0.5299}$

$= 1.634$

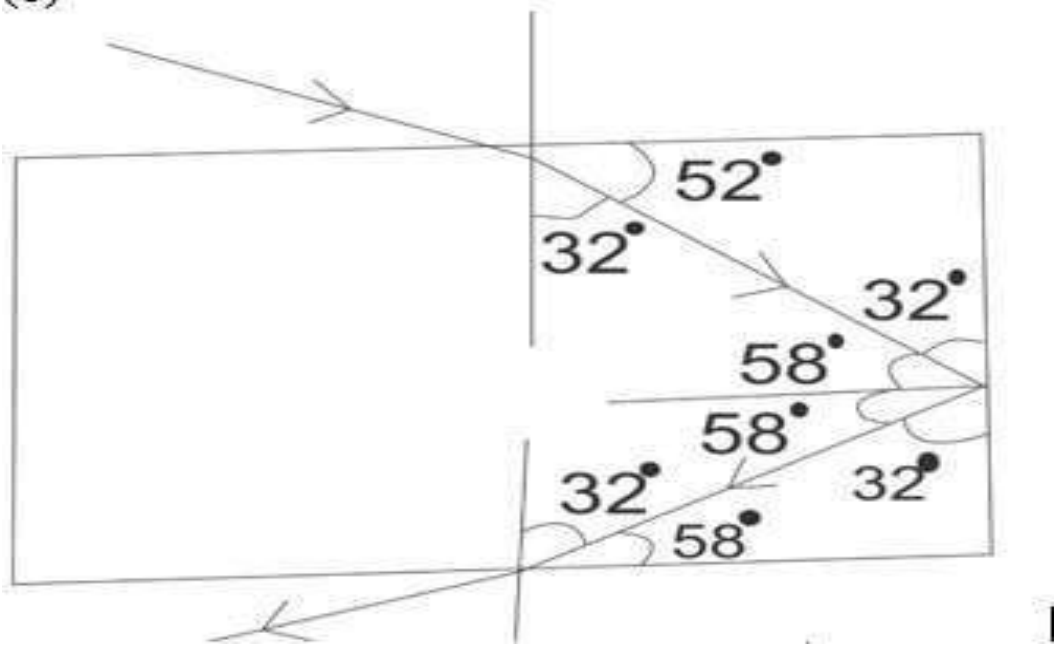
(iii) $Sin\ C = \frac{1}{n}$

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

$= \sin^{-1} 0.6120$

$= 37.73^0$

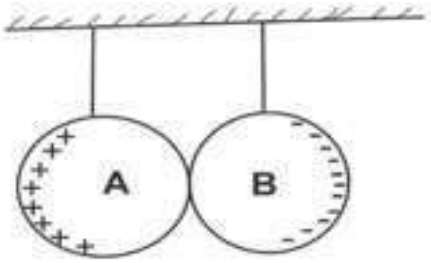
(b)



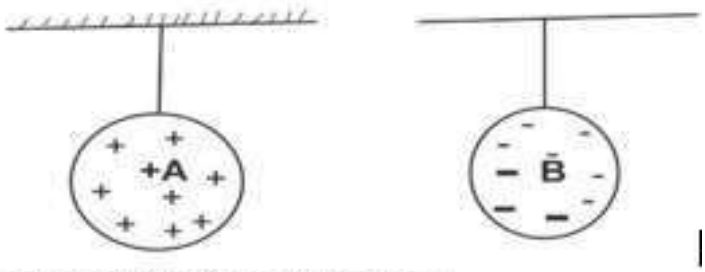
Emerging ray

(c) Monochromatic light is light of single colour

(a) (i)



(ii)



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) $Q = C_T V$ √

$= 2\times10^{6}\times10$ √√

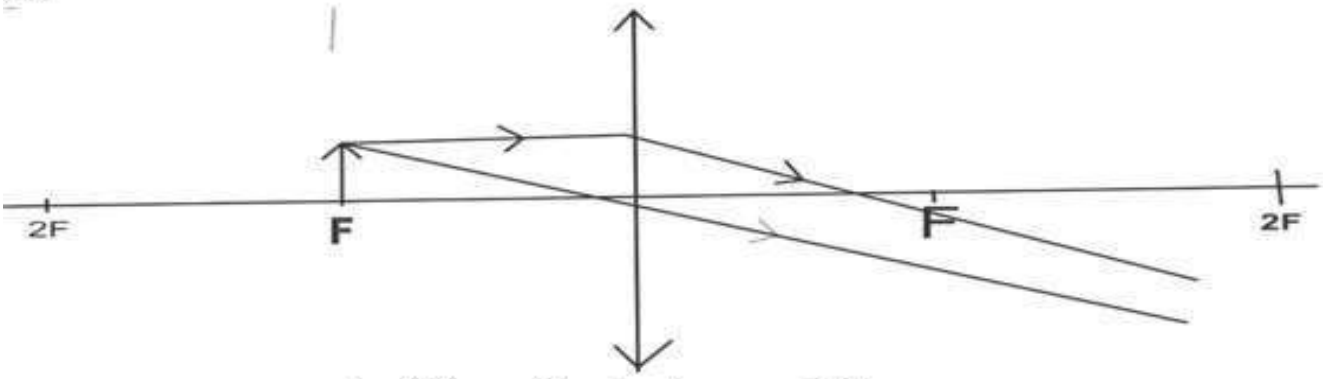
$= 2.0\times10^{-5} C$

(iii) $2.0\times10^{-5} C$

-Type of dielectric material. √

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

(b)



Parallel rays forming image at infite

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

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

$v = 6.667cm$

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

$\frac{6.667}{20}$

$= 0.333$

-Real.

18. (a) To reduce power losses √ since high voltage implies low current thus less heating

according toP=I2R

(b) (i) I Ring circuit. √

II A-Neutral. √

B-Live

remains live.

(iii) Fuse. √

(iv) Earthing guards against electric shocks. √

(c) (i) $I = \frac{P}{V}$ √

$\frac{1800}{240} = 7.5A$ √

(ii) $pt = M\omega C\omega\theta + \varsigma\theta$

$1800t = 54 \times 4200 \times 70 + 9000 \times 70$ √

$t = 9170 \ \sec s \ (2.55hrs)$

$Total \ \cos t = 2.55 \times 30 \times 1.8 \times 6.70$ √

$= 922.60 \ sh$