FORM FOUR CLUSTER KCSE MODEL9

PHYSICS PAPER 2 ANSWERS

SECTION A (25 Marks)

Answer ALL questions

1. (a) Forms of real image along the focal plane of objective lens. ;

   (b) Adjusted such that its object is at its focal point to form a virtual image at insinity.

2. J is moved towards A of potentiometer. ;This increases resistance in the circuit ;

3. (a) Concave lens forms virtual image ;

   (b) Replace concave lens with a convex lens. ;

4. Magnet – Dipoles in a domain form a closed chain formation.

   Magnetic – Dipoles in a domain face in the same direction.

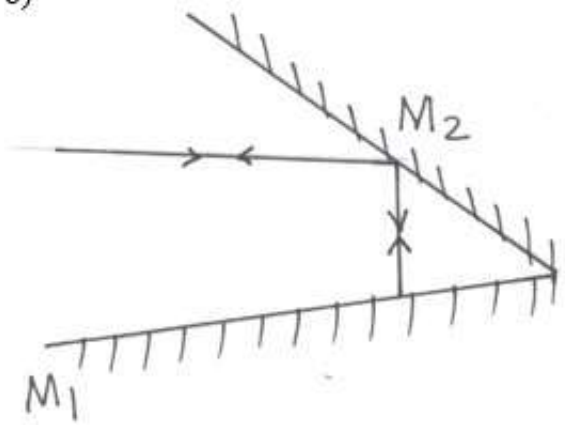
   Non-magnetic –Dipoles faces different directions.

5. Higher rate of chemical reaction takes place in alkaline cell than in lead acid accumulator.

6. Resistance developed in a conductor when a current of 1 A flows when the P.d across the conductor is iv.

7. (a) $a = 30^0$;

   b)



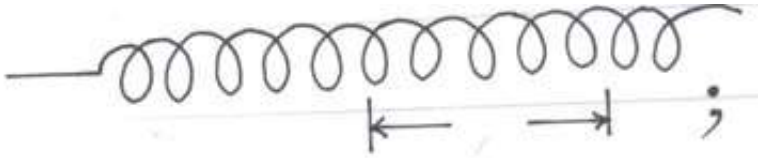
8. Glass is optically more dense than air ;

9. (a)

(b) Electron flows from B to A neutralizing a positive in B and leaving behind a positive in A. ;

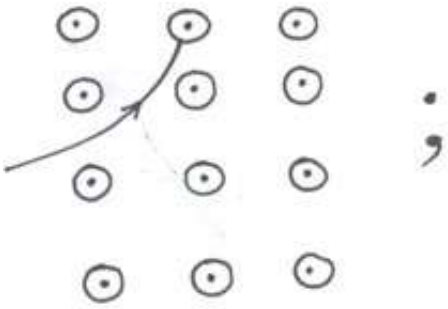
10. -P.d across the ends of conductor is directly proportional to the current passing through it ;

    -Temperature and other physical conditions must be kept constant;

11. 

    OR any other correct distance

12. $E = IR_1 + IR_2 + Ir$;

13. 

14. Incident ray meets the tangent at the point of incident normally. ;

15. B is more deep than A ;

16. Resultant magnetic fields between the wire carrying current and the bar magnets; is such that there is more magnetic field /strength below the wire than above it. ;

17. $I = \frac{Q}{t} = \frac{100 \times 10^{-6} C}{25 \times 10^{-3}}; Sub$

    $= 4 \times 10^{-3} A;$

SECTION B (55 Marks)

Answer ALL questions

18. (a) -Enlarged ;

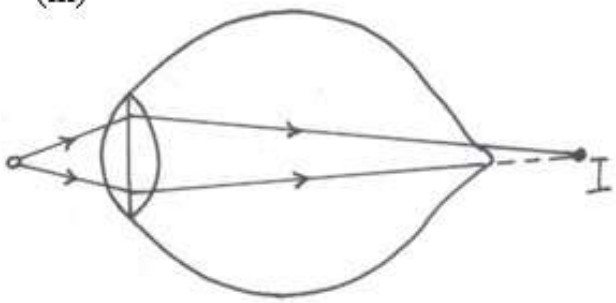
    -Upright; or

    - Erect ;

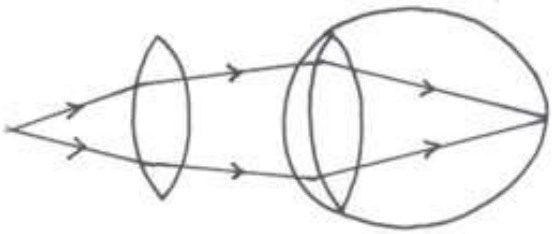
(b) (i) Long sight ;

(ii) Longer eye ball/shorter focal length

(iii)



(iv)



;

(c) (i) $u = 10 + 5;$

$= 15cm;$

(ii) $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$

$= \frac{1}{15} + \frac{1}{10};$ Sub

$= \frac{2+3}{30}$

$f = 6\,cm.;$

(iii) Power $= \frac{1}{f}$

$= \frac{1}{+6}; sub$

$= 0.1666666\,D;$

19. (a) (i) only B1 lights ;

B3 is short-circuited by S3 being on;

(b) B2 will not light;

B1 and B3 will light with equal brightness;

No current flows through B2 ;

(c) $V_2 = 2V$;

20. (a)

(i) Transverse –particles vibrates perpendicularly to the direction of the ware motion. Longitudinal – Particle vibrates in the same direction as that of the ware motion. ;

(ii) Transverse – electromagnetic waves ; Longitudinal – sound waves ;

(b) (i) $f = \frac{30}{60} = 0.5HZ$;

(ii) $V = \frac{6m}{2s} = 3m/s$;

$\lambda = \frac{v}{f} = \frac{3}{0.5}$

$= 6m$;

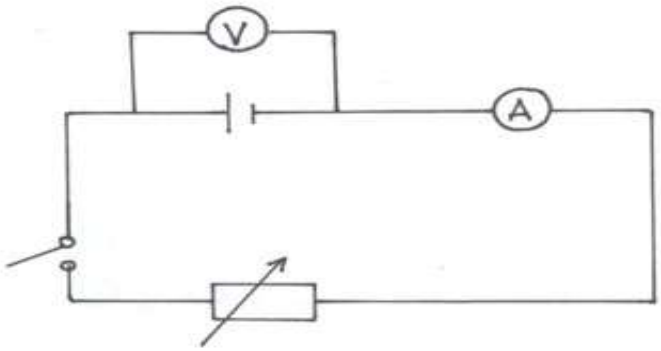
(c)

(i) Loud sound all through is heard ; Continuous constructive is interfered ;

Alternative and equally spaced loud and soft sound are heard; Alternative constructive and destructive Interference ;

21. (a)

(ii)



(b) (i) E = slope ;

$= \frac{20-10}{(12-7)\times 10^{-3}} mV$;

$= \frac{10}{5} \times 10^3$

$= 2000mV$

$= 2V$;

(ii) $r = -R - \text{int } ercept$

$-r = 5\Omega;$

$r = 5\Omega$

22. (a) (i) Quantity of charge per unit voltage ;

(ii) Put it closer to the same charge, ; there is repulsion forces between the two;

(b) No change in leaf divergently; No charge inside a hollow sphere;

(c) (i) $Q = cV$

$= 2 \times 10 ; sub$

$= 20\mu C ;$

(ii) $C_1 = \frac{3 \times 3}{3+3} + 2 ; Sub$

$= \frac{9}{6} + 2$

$= 305\mu F ;$

23. (a) Rate of change of magnetic flux linkage is directly proportional to the size of induced emf. ;

(b) (i) When water waves pass, float oscillates up and down; causing the magnet to move up and down; this causes a change in magnetic flux linkage between the turns of the coil and the magnet; this induce emf which causes induced current.

(ii). Kinetic energy ⟶ electrical energy ⟶ Light and heat;

(iii) –Use lesser number of turns on the coil;

-Use a weaker magnet;