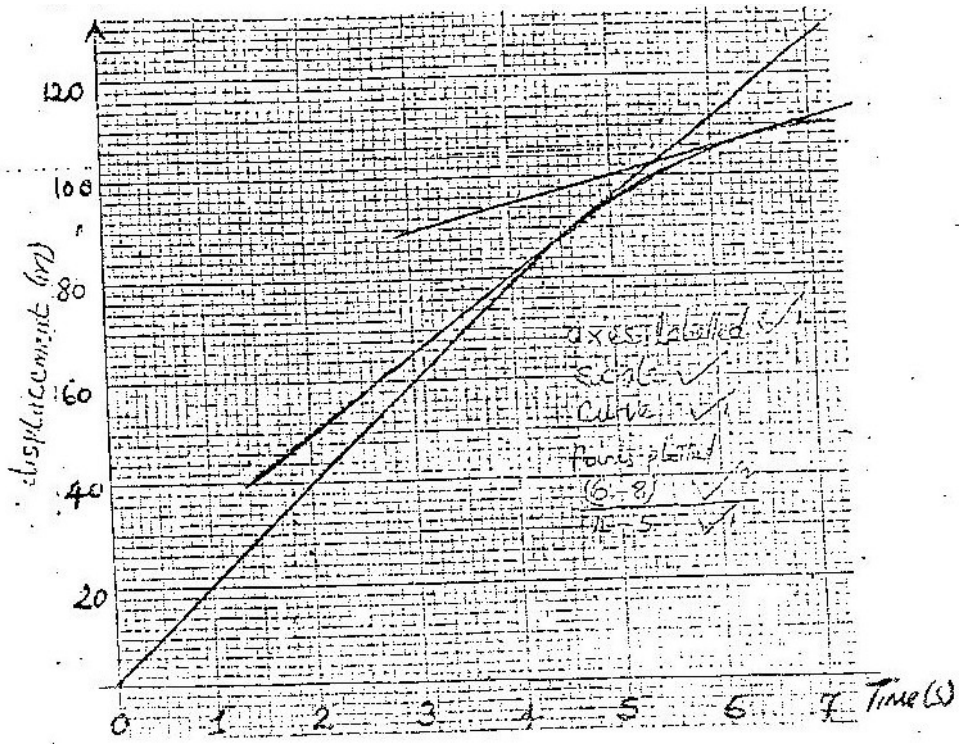
K.C.S.E 1995 PHYSICS PAPER 232/2 MARKING SCHEMES

1. (a)



(b) Constant Vel^0 Uniform vet - zero accl^n

(c) $\sqrt{4.5} = \frac{118 - 50}{6.5-2} = 15 m/s$ 15.5 + -1.5 (14-17)

$\sqrt{6.5} = \frac{112 - 70}{7} = 6 m/s$ (4=6)

Average accln = $\frac{\Delta v}{t} = \frac{v - 11}{t} = \frac{(6-15)}{2}$

$= -4.5 m/s^2$

2. $\frac{1}{R_C} = \frac{7}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

$= \frac{1}{6} + \frac{1}{3} + \frac{1}{6}$

$= \frac{1}{6}$

$R_C = \frac{6}{4} = 1.5 \Omega$

(b) Total resistance = 1.5 + 2.5 = 4 Ω

E = 1(YFR) Or $I = \frac{V}{R}$

2 = LI

Current through xy I = 0.5 A

P.d across yz = 0.5 x 1.5 V

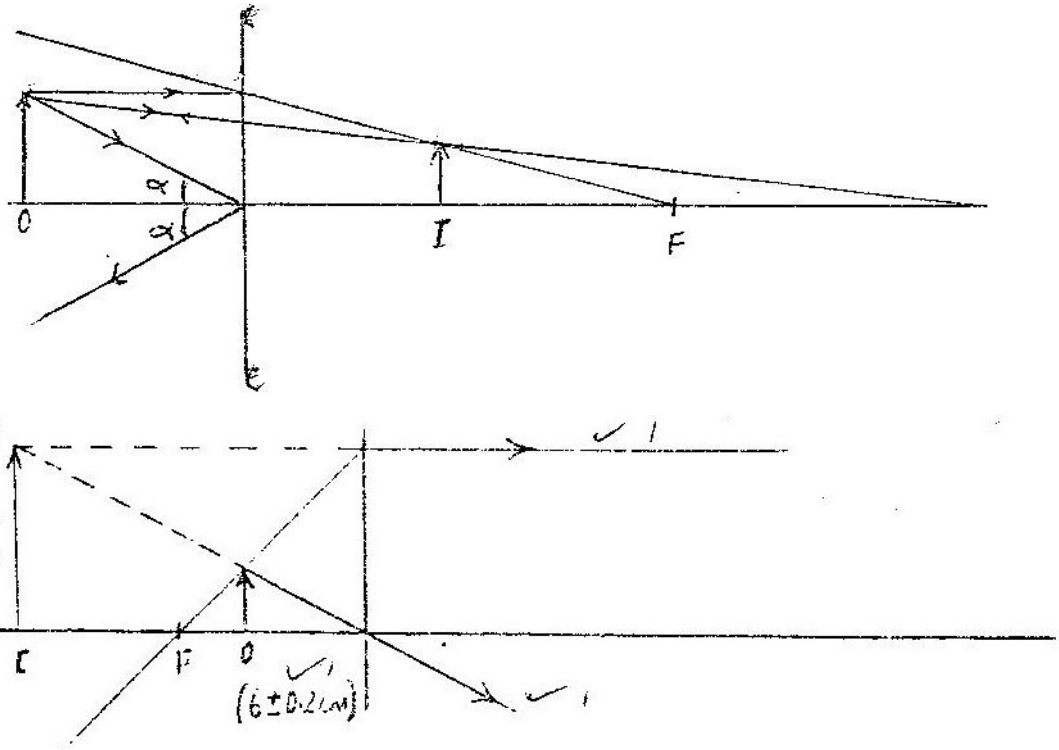
s= current through 3 Ω = $\frac{0.5 \times 1.5}{3}$ = 0.25 A

(c) R = /L A

I = RA = $\frac{6 \times 5.0 \times 10^{-6}}{1.0}$ $\frac{\Omega m^2}{m}$

= $3.0 \times 10^{-5} \Omega$ m

3. (a)



(ii) Magnification = $\frac{V}{u}$ $\frac{Isign}{Osign}$ = $\frac{1.1}{1.6}$ OR $\frac{1.75}{2.5}$ = 0.7 ± 0.05

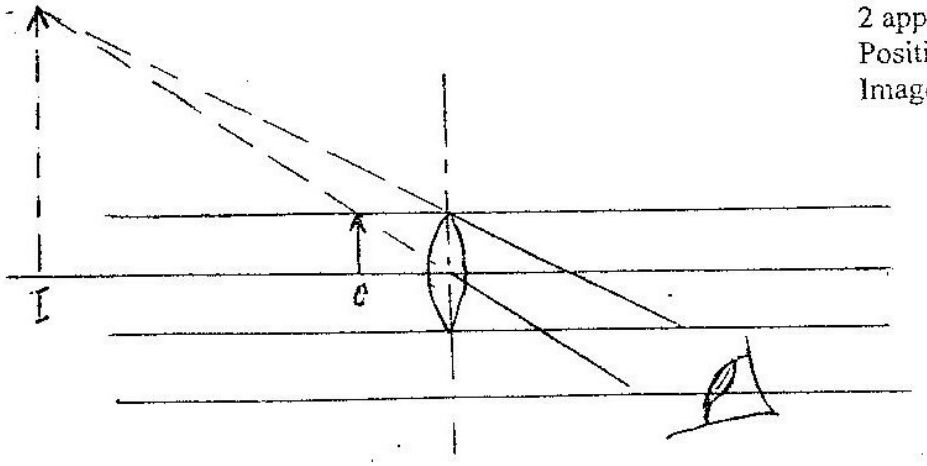
(b) $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$ $\frac{1}{u} = \frac{1}{10}$

u = 6cm

$\frac{1}{U} = \frac{1}{10} + \frac{1}{15}$ Objects is 6 cm from the lens

4 (a) Lens symbol object between f & F 2 appropriate rays position of image
Image correctly drawn

Lens symbol
Object between f & F
2 appropriate rays
Position of image
Image correctly drawn



The diagram in figure 3 shows a certain eye defect

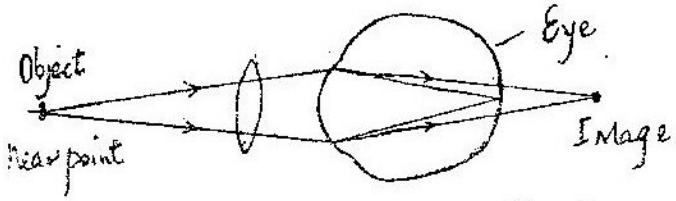


Fig. 3

(b) (i) Name of defect is long sightedness
(Refer to the diagram in the figure 3 above)

(c) (i) For water not to pour weight of the water must be less centrifugal force OR for water to pour out $\frac{MV^2}{r} > mg$

(ii) Frictional force F = Centripetal force

$$\frac{MV^2}{R} = \frac{1200 \times (25)^2}{150}$$

$$= 5.0 \times 10^3 N$$

5. (a) (i) The magnitude of the induced e.m.f is directly proportional to the rate at which the conductor cuts the magnetic field lines
The induced current flows in such a direction as to oppose the changes producing it.

(ii) Plugging a magnetic into a coil

- in speed its g twins as straight of magnetic field
- Results in an increased in the induced e.m.f

(b) (i) Energy is neither created nor destroyed
Make power constant
VU = Joules (½) current = charge (½)
Count time
P = IV
For large V, 1 must lower for power input to be equal to power output

(ii) $\frac{Vs}{Ns} - \frac{Vp}{Vp}$ OR $\frac{Vs}{Vp} - \frac{Na}{NP}$

$$Ns = \frac{Vs \times Np}{Vp} = \frac{9 \times 480}{240}$$

$Ns = 18$

SECTION II

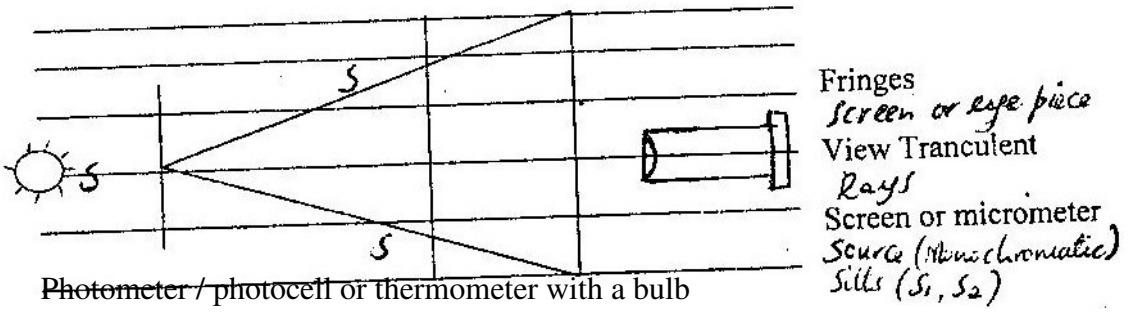
6. (a) Progressive wave- Wave profile moves along with the speed of the wave
Stationary wave – wave profile appears static

Progressive wave – Phase of points adjacent to each other is different
Stationary wave – All points between successive node vibrate in phase

Progressive wave – Energy translation in the direction of the wave travels
Stationary wave- No translation of energy but energy associated in the wave

(b) (i) A glass slide i.e. blackened with soot or paint lines are drawn close together using a razor blade or pin.

(ii) Path differences equals to an odd number of half wavelengths or completely out of phase (180^0)



(iii) ~~Photometer / photocell~~ or thermometer with a bulb

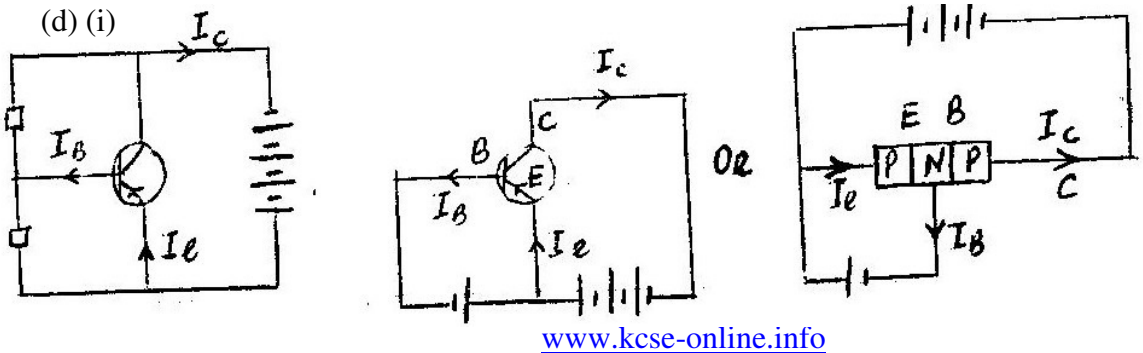
7. (a) Common or sillen (semiconductor) is doped with impurity atoms which trivalent (e.g boron or indium) intensity in currency on pole group 4 doped with trivalent

(b) p-n-p emitter and carries made of p type material are of n- type material for charge carries holes

- n – p – n – emitter and collector made of n- type material are made of p- type (or charge carries electrons)

(c) At the middle of the reaction of a curve a tangent is drawn change on output (ΔV_0) is determined and a corresponding change input (ΔV_1) also attained change amplification.

(d) (i)



(ii) $i_2 = l_C$ r l_B

(e) Base – emitter – forward biased Base collector – reversed biased