K.C.S.E 1995 PAPER 1 MARKING SCHEME

1. Micrometer screw gauge
2.

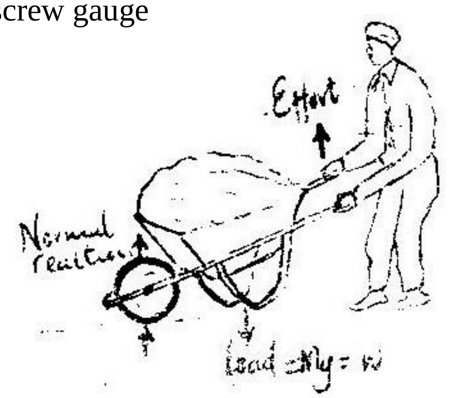


Fig. 1

3. Effort would reduce
4. Flow from a to B
5. Pressure difference between liquids in A and B is P = egh where e is liquid, g = acceleration due to gravity and h is height
   But force = P x cross section area of siphon, P = F/A
   Thus F = egh A Since e.g. A are constants
   $F \alpha h$
6. No change in flow OR the flow will still continue
7. Oil spread until it is one molecule thick or film taken as a perfect circle or oil drop has been taken as perfect sphere/ cylinder/ uniform thickness
8. The liquid expand uniformly, expansion is measurable (large enough), thermal conductivity
9. Rectilinear propagation/ light travels in a straight line
10. Water/ or glass are poor conductor of heat
11. Each material is brought in turn to touch the cap. The conductor will discharge the electroscope while the insulator will not (accept bring near conductor gauge)
12. Can be short – circuited without being destroyed
    - Longer life/ electrolyte never need attention
    - Can stay discharged without being destroyed
    - Can be charged with large currents faster charging
    - More rugged/ not damaged by rough condition of use/ robus
    - Delivers large current, light
13. Surface tension / adhesive forces supports water column or more capillarity in tube 2 than tube 1
    - Surface tension is the same in both tubes and equal to the weight of water column supported
    - Narrow tube has longer column to equate weight to wider tube
    - Volume of water in the tubes is same hence narrower tube higher column

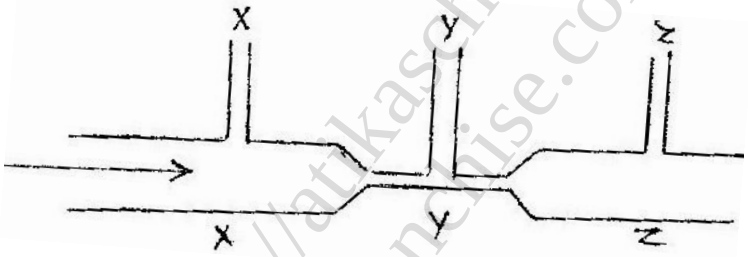
14. – Length of conductor in the field
    - Angle between conductor and fields
15. All ferromagnetic materials are attracted by magnets or any magnetic materials is attracted

16. – increasing the tension
    - Reducing the length
17. At equilibrium sum of clockwise moment = sum of anti – clockwise moments
    Clockwise moments = P x X = QY
    Px = Qy
18. h glass = V air / V glass
    Vg = $3 \times 10^8 / 1.5$
    $1.5 = 3 \times 10^8 \sqrt{g}$
    $= 2 \times 10^8 \text{ ms}^{-1}$
19. V = f λ sine V is constant reducing f to 1/3 ⇒ λ increases 3 fold
20. While light is composed of seven colour different/ many colour. For each colour glass had different value of refractive index/ different velocities of different λ. So each colour is deviated differently causing dispersion

21. A body at rest or in state of uniform motion tends to stay in that state unless an unbalanced force acts on it.

22. Heat capacity is quantity of heat required to raise the temperature of the body by 1 k or 1 ^{0}C while, specific heat capacity is quantity of heat required to raise temperature of unit mass of body by 1 k/ 1^0 C.

23. (If x ≠z but both above y give 1 mk. Accept difference of 1.0 mark)



hX = hZ > hY

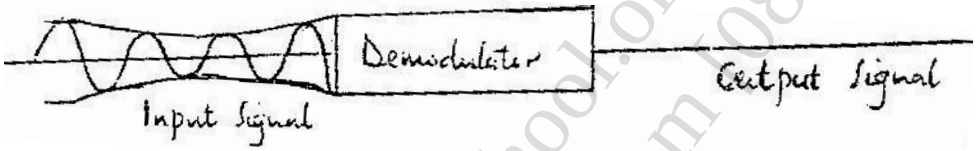
24. – Reducing - Increasing

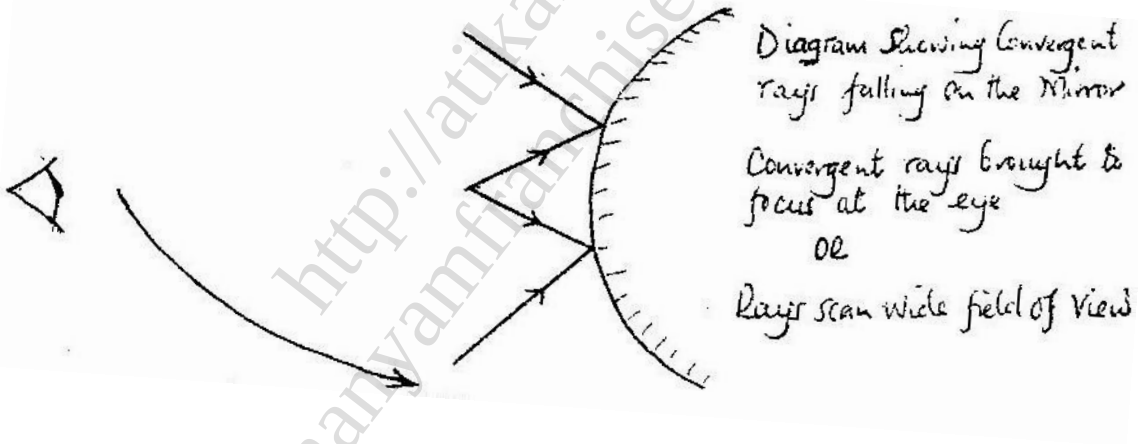
25. Polarization

26.

Type of radiation	Detector	Uses
Ultra violet	Photographic paper fluorescence material	Cause ionization kills bacteria OR operating photosular cells photography
Infrared	Phototransistor blackened thermometer	Warmth sensation
Radio waves	Radio receiver or TV receiver	Communication

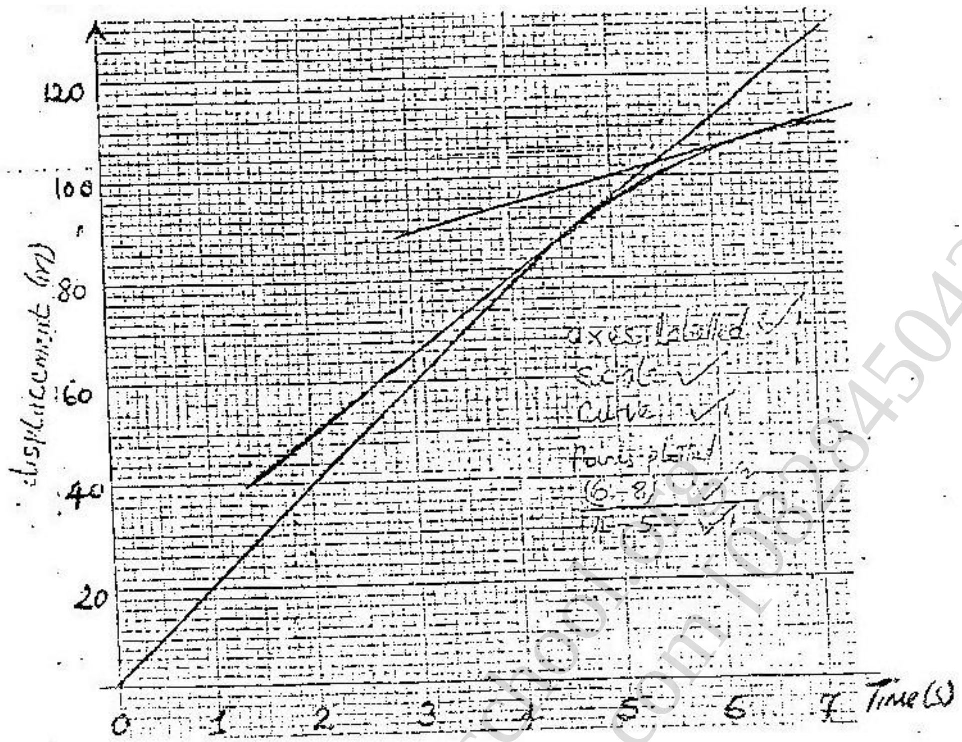
27. $E_2 = E_1 + h f$ i or $E_2 – E_1 = h = c/\lambda$
    h= plank constant
    c- Velocity of light
    λ- Wave length of light

28. – Lead - Very dense/ has high atomatic mass
29. Extrapolation on graph (line to touch frequency)
    Reading on graph to (4.0 + - 0.2) x 10^{14}Hz
30. Lines parallel to the one shown but cutting of axis further in
31. Quality / Timbre
32. X = 14
33. The point where the weight of the body acts
34. Temperature of source be the same
    - Length of rods be the same / wax
    - Amount of wax (detector) be the same
35. 

36. 

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

1. (a)



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

(c) $\sqrt{}4.5 = \frac{118 - 50}{6.5-2} = 15m/s$ 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. $\frac{l}{R_C} = \frac{7}{R_1} + \frac{l}{R_2} + \frac{l}{R_3}$

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

$= \frac{1}{6}$

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

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

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

2 = Ll

Current through xy l = 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

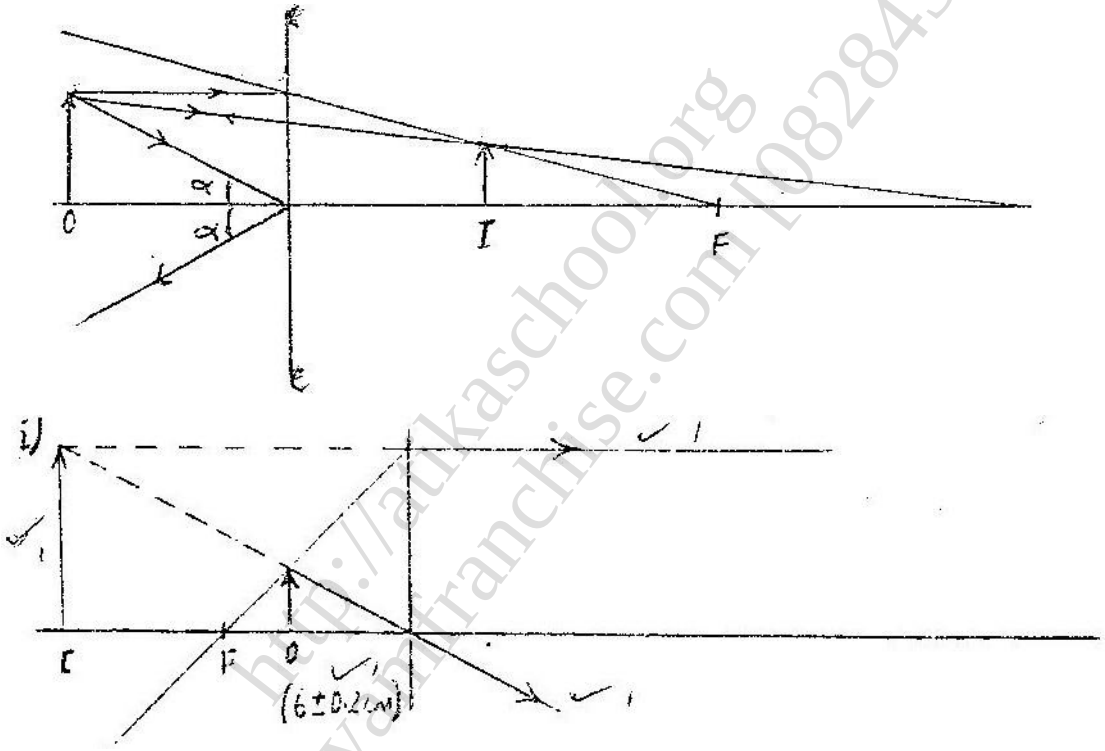
(c) R = /L A

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

L

= 3.0×10^{-5}Ω m

3. (a)



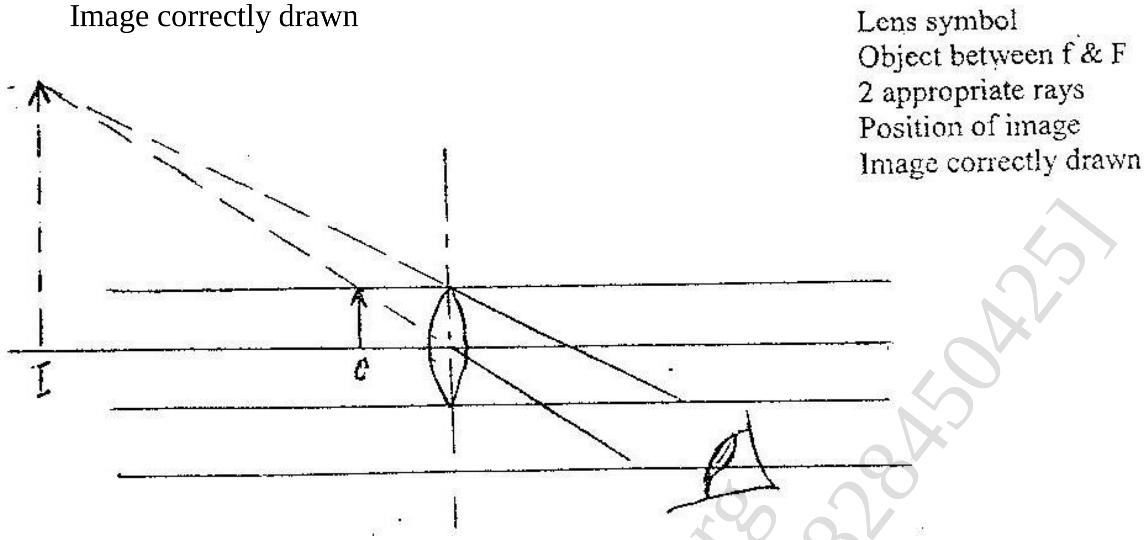
(ii) Magnification = $\frac{V}{u}$ $\frac{Isign}{Osign}$ = $\frac{1.1}{1.6}$ OR $\frac{1.75}{2.5}$ = 0.7 ± 0.05

(b) $\frac{l}{f} = \frac{l}{u} + \frac{l}{v}$ $\frac{l}{u} = \frac{10}{60}$

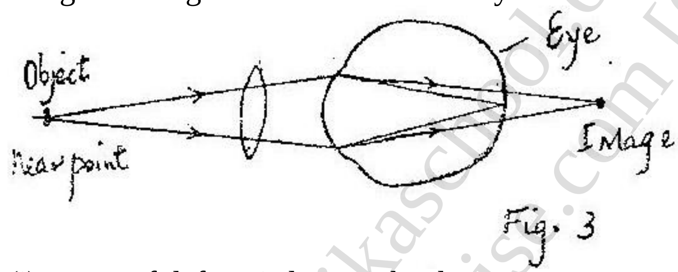
$\frac{l}{10} = \frac{l}{u} + \frac{l}{v}$ u = 6cm

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

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



The diagram in figure 3 shows a certain eye defect



(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

$VU = \frac{\text{Joules}}{\text{Count}}$ (½) current = $\frac{\text{charge}}{\text{time}}$ (½)

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

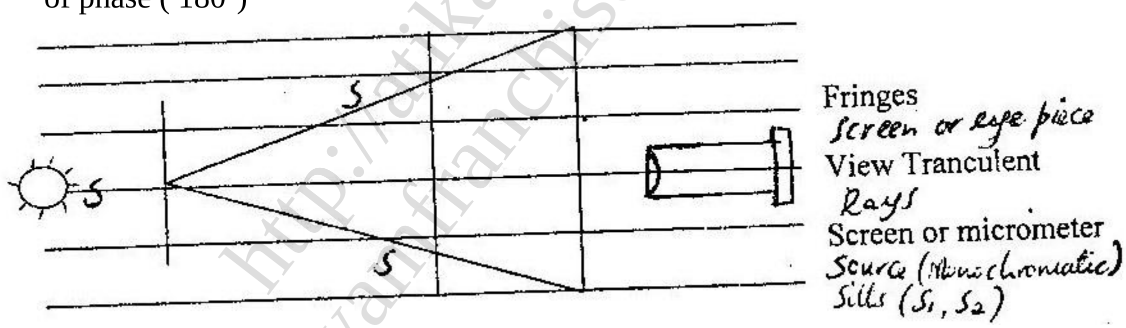
6. (a) Progressive wave- Wave profile moves along with the speed of the wave
Stationary wave – wave profile appears static

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

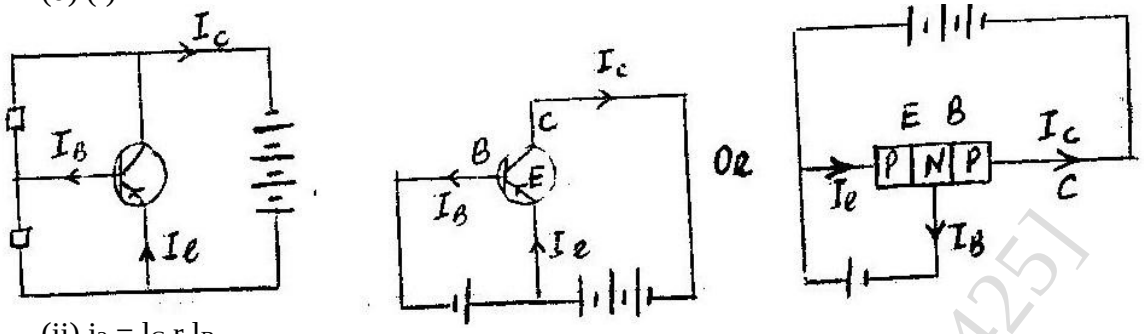
7. (a) Common or sillen (semiconductor) is doped with impurity atoms which trivalent (e.g boron or indium) intensity in currency on pole group 4 doped with trivalent

(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