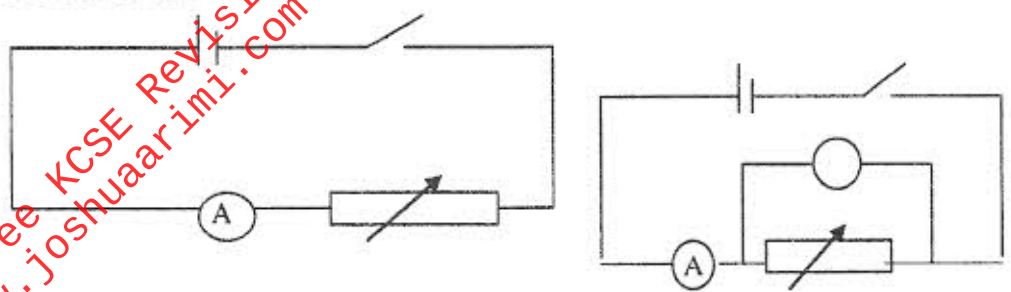
PHYSICS PAPER 232/2 2008
MARKING SCHEME

1. BC – Total absence of light ; umbra, completely dark
   Total darkness
   Rays are completed blocked from this region by the object

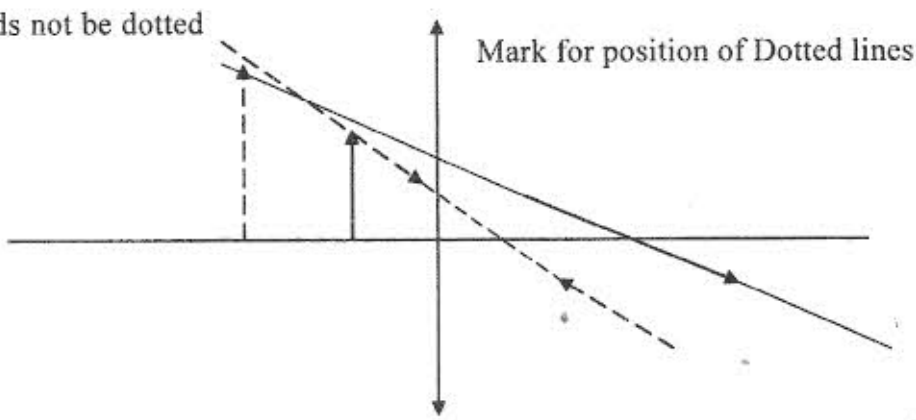
2. Leaf in A falls abit while leaf in B rises abit
   The two leaf electroscope share the charge

3. Correct circuit



4. Hammering causes the domaks or diples to vibrate when setting, some domains themselves in the N-S direction due to the earth's magnetic field causing magnetisation

5. needs not be dotted



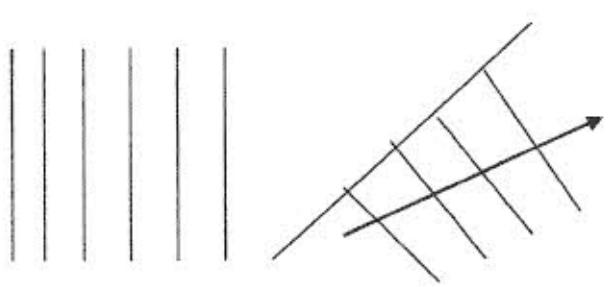
Mark for position of Dotted lines + image

6. When the switch is closed, I flows the iron core in the solenoid is magnetized attracting the flat spring this causes a break i contact disconnecting current. Magnetism is lost releasing the spring
   Process is repeated (make and break circuit)

7. Movement equals 1.75 oscilations

$$T = \frac{0.7}{1.75} = 0.4 \text{ sec.} \quad F = \frac{1}{T} = \frac{1}{0.4} = 2.5 \text{ HZ}$$

8.



spacing .
Direction must be correct

9. i). Ovolts
No current

ii). 3 volts
current flows in the resistors

10. $P = \frac{V^2}{R}$ $P = \frac{2202}{2402_{100}}$

$R = \frac{240^2}{100}$

$= 84\ J/S$

11. Short sightness/ myopia
Extended eyeball/ lens has short focal length / eye ball too long (any two)

12. Spot moves up and down

13. Frequence increases
Accept becomes hard
Wavelength decreases
Strenght / quality

14. Beta particle
Gain of an electron
Mass number has not changed but atomic number has increased by 1
Atomic number has increased by one
Nature will not affect the speed

15. a). Temperature
Density

b). **Graph**

i). 46.5m accept 46m to 47m

ii). $t = \frac{4x}{V}$

$v = \frac{4x}{t}$ or slope $= \frac{4}{V}$

$= \left[\frac{0.51}{43}\right]$

$= 3.31\ m/s$

iii). For max internal observer is at one end and so the distance = 2 l
$337 \times 4.7 = 2L$
$L = 792M$

c). i). Distance moved by sound from sea bed = 98×2 m

$V = \frac{98 \times 2}{0.14} = 1400M/S$

ii). Distance = V × t

$$= 1400 \times \frac{0.10}{2}$$

$$= 70\text{m}$$

16. a). Light must travel from dense to less dense medium
Critical angle must be exceeded ($< i > < c$)

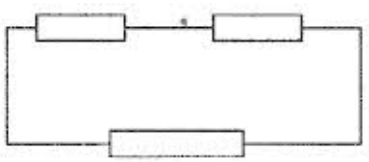
b). $= \frac{\text{Sin i}}{\text{Sin r}}$ $= \frac{\text{Sin i}}{\text{Sin r}}$

$= \frac{\text{Sin 90}}{\text{Sin }\theta}$ $= \frac{\text{Sin }\theta}{\text{Sin 90}}$

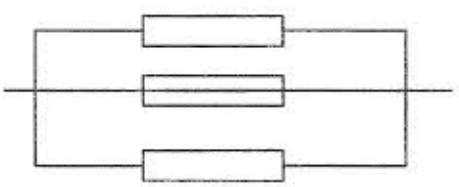
$= \frac{1}{\text{Sin }\theta}$ $= \frac{1}{n}$

$= \frac{1}{\text{Sin }\theta}$

17. a). i).



ii).



b). i). Open circuit p.d = 2.1v

ii). Different in p.d = p.d across
2.1 – 0.8 = 0.1r
0.3 = 0.1r

$$R = \frac{0.3}{0.1} \quad = 3n$$

iii) When I is being drawn from the cell, the p.d across the external circuit is the one measured

$$01 \times R = 1.8$$

$$R = \frac{1.8}{0.1} \quad = 18n$$

18. a). Flux growing/ linking
No flux change
Flux collapsing

Switch closed : Flux in the coil grows and links the other coil inductiung an E.M.F
Current steady : No flux change hence n induced E.M.F
Switch opened : Flux collapsed in the R.H.S coil inducing current in opposite direction

b). i). Reduces losses due to hystesis (or magnetic losses) because the domains in soft-iron respond quickly to change in magnetic (or have low reluctance) i.e easily magnetized and demagnetized

ii). Reduces losses due to eddy current because laminating cuts off the loops of each current reducing them considerably

c). i). $\frac{VP}{V_S} = \frac{NP}{N_S}$ $\quad P = I_S VS$

$\frac{400}{V_S} = \frac{200}{200}$ $\quad IS = \frac{800}{400}$

$V_S = 400$ Volts $\quad = 20A$

ii). $P_P = P_S$

$800 = 400\, I_P$

$I_P = \frac{800}{400}$

$= 2A$

19. a). i). Hard X – Rays

ii). They are more penetrating or energetic

b). i). Cathode rays/ Electrons / electron beam
Anode / Copper Anode

ii). Change in P.d across PQ cause change in filament current.
Or temperature of cathode increases this changes the number of electrons released by the cathode hence intensity of X-rays

iii). Most of K.E is converted to heat

iv). High Density

c). Energy of electrons is $= QV = ev$
$= 1.6 \times 10^{-19} \times 12000$

Energy of X-Rays $= Hf$
$= 6.62 \times 10^{-34} \times f$

$6.62 \times 10^{-34} \times f = 1.6 \times 10^{-19} \times 12000$

$F = \frac{1.6 \times 10^{-19} \times 12000}{6.02 \times 10^{-3f}}$

$= 2.9 \times 10^{18}$Hz

Accept ev = Gf

$F = \frac{ev}{G}$