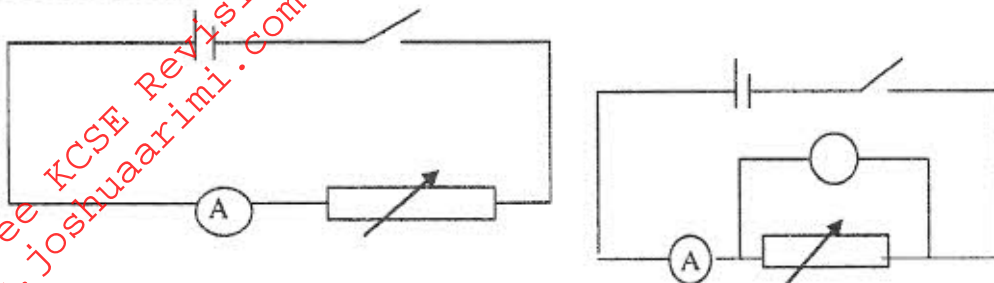# PHYSICS PAPER 232/2 2008
MARKING SCHEME

1. BC – Total absence of light ; umbra, completely dark
   Total darkness
   Rays are completed blocked from this region by the object
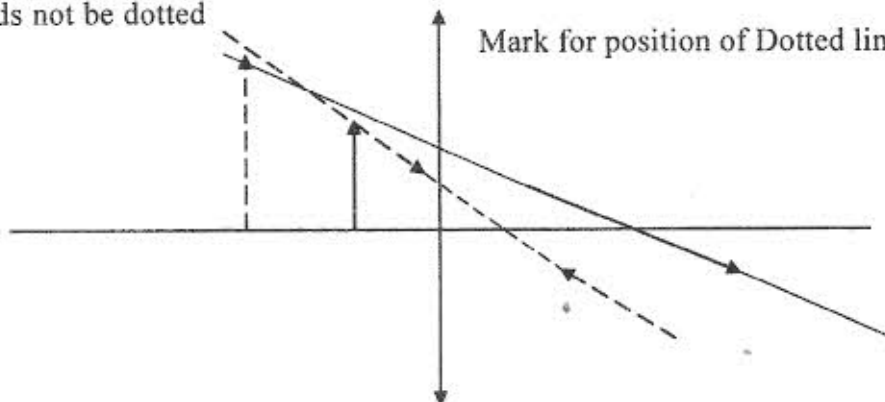
2. Leaf in A falls abit while leaf in B rises abit
   The two leaf electroscopes share the charge

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.
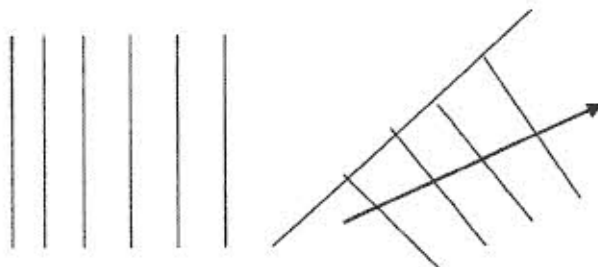
   spacing .
   Direction must be correct

9. i). 0volts
        No current

    ii). 3 volts
        current flows in the resistors

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

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

    $\quad = 84 \, J/S$

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

12. Spot moves up and down

13. Frequence increases
    Accept $\qquad$ becomes hard
    $\qquad\qquad$ Wavelength decreases
    $\qquad\qquad$ 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 $\quad$ accept 46m to 47m

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

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

        $\qquad = \left[\dfrac{0.51}{43} \right]$

        $\qquad = 3.31 \, m/s$

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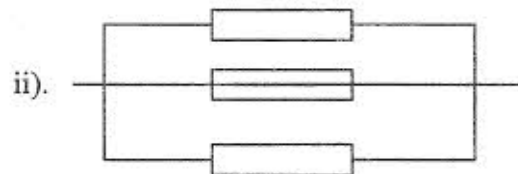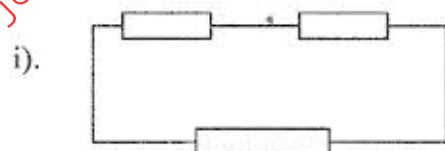 $337 \times 4.7 = 2L$
            $L = 792M$

    c). i). Distance moved by sound from sea bed $= 98 \times 2 \, m$

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

ii). Distance $= V \times t$

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

$$= 70m$$

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

    b). $= \dfrac{Sin\ i}{Sin\ r}$ $\qquad = \dfrac{Sin\ i}{Sin\ r}$

    $= \dfrac{Sin\ 90}{Sin\ \theta}$ $\qquad = \dfrac{Sin\ \theta}{Sin\ 90}$

    $= \dfrac{1}{Sin\ \theta}$ $\qquad = \dfrac{1}{n}$

    $= \dfrac{1}{Sin\ \theta}$

17. a). i).

    ii).

    b). i). Open circuit p.d $= 2.1v$
        ii). Different in p.d = p.d across
             $2.1 - 0.8 = 0.1r$
             $0.3 = 0.1r$
             $R = \dfrac{0.3}{0.1} \qquad = 3n$

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

             $01 \times R = 1.8$

             $R = \dfrac{1.8}{0.1} \qquad = 18n$

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). $\dfrac{VP}{V_s} = \dfrac{NP}{N_s}$ $P = I_sVS$

      $\dfrac{400}{V_s} = \dfrac{200}{200}$ $IS = \dfrac{800}{400}$

      $V_s = 40 \text{ Volts}$ $= 20A$

  ii). $P_P = P_s$

     $800 = 400 I_P$

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

       $= 2A$

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 $= Hf$
                            $= 6.62 \times 10^{-34} \times f$

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

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

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

   Accept $ev = Gf$

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

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