

MOLO DISTRICT MOCK EXAMINATION
Kenya Certificate of Secondary Education 2008

MARKING SCHEME
PHYSICS
Paper Two
July/August 2008

SECTION A

1. One which if a current is passed through it, voltage across its ends is not proportional to the current;
(1mk)
2. Recliner property /light travels in a straight line;
(1mk)
3. cooking;
 Communication;
(2mks)
4. Angle of inclination to the field;
 - Length of conductor;
(2mks)
- 5.



6. (a) Minimizing energy lost due to collisions;
 (b) Hard Soft
 1. Highly penetrative /Energy Low penetrative /Energy
 2. Short wavelength Long wavelength
 3. High frequency Low frequency
 4. Produced at high voltage produced at low voltage
(1mk)
Any one x 3 = (3mks)

7. $P = \frac{V^2}{R}$; $R = \frac{V^2}{P} = R = \frac{250 \times 250}{3000} = 20.83 \Omega$;

8. $138 - 90 = 48^\circ = C$

$$n = \frac{I}{\sin C};$$

$$n = \frac{I}{\sin 48}$$

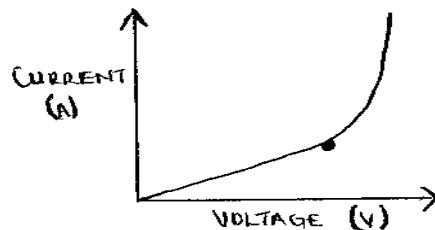
$$n = 1.346;$$

(3mks)

9. $E = h \frac{C}{\lambda}$
 $\lambda = \frac{hc}{E}; \quad = \frac{6.663 \times 10^{-34} \times 3.0 \times 10^8}{3.37 \times 10^{-19}};$
 $= 5.902 \times 10^7 \text{m};$ (3mks)
10. Controlling the intensity of the beam/ Brightness; (1mk)
11. A: Manganese IV Oxide mixed with carbon;
 B: Ammonium chloride solution; (2mks)
12. Charges concentrated by point action;
 Similar charges from ionized gas repel while unlike charges attract; (2mks)
13. Dry cells uses solid electrolyte while wet cells uses solution of an electrolyte; (1mk)

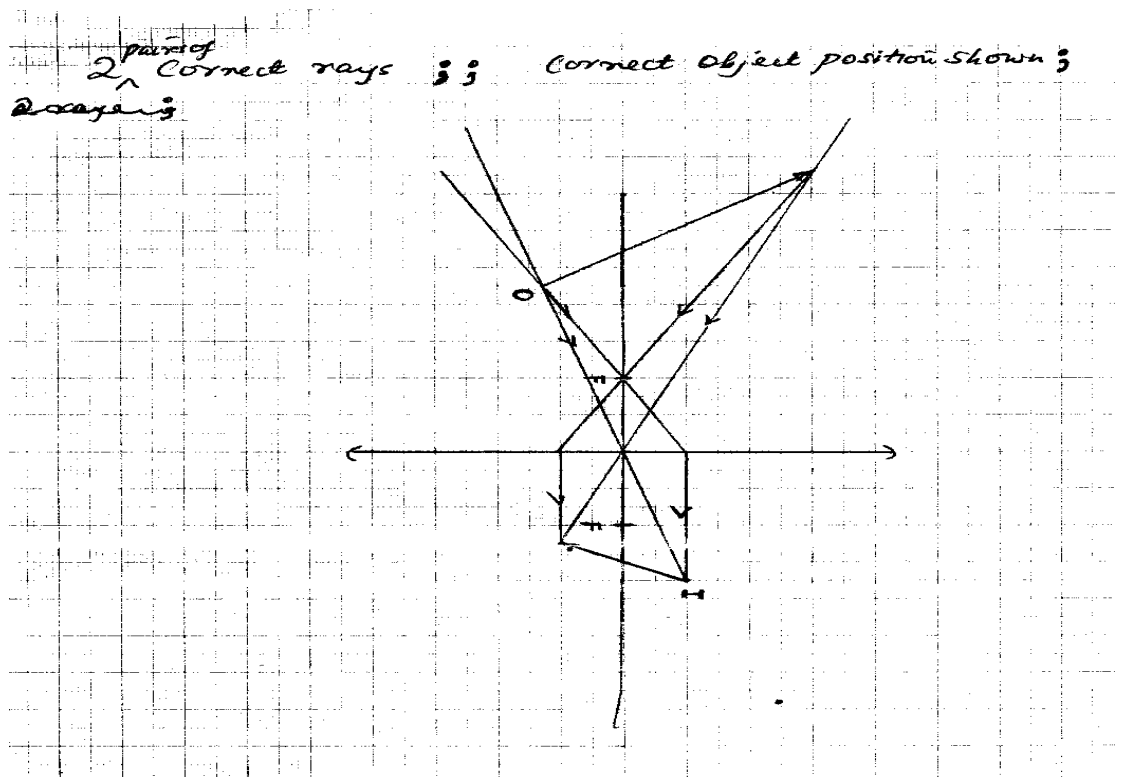
SECTION B:

14. (a) i) To be easily ionized by the radiations. (1mk)
 (ii) The radiation are transparent to the window; They collide with argon gas causing ionization; more electrons are produced (Avalanche/electrons) . A pulse of current; is produced which is passed through the counter as clicks; (4mks)
- (iii) Quenching agent /absorbing kinetic energy of the positive ions ; (1mk)
 (iv) Use of amplifier; (1mk)
 (v)
- $a = 226;$
 $b = 88,$
- (b) In metals rise in temperature causes an increase in resistance while in semi conductors increase in temperature causes a decrease in resistance.;;
 (ii)



15. (a) Forms a magnified image
 (b) focus the image of the distant object on a screen until a sharp image is formed; Measure the distance between the mirror and the screen d; Repeat two or three times, find the average d which is the focal length.; (3mks)
- (c)
- (d) $U + V = 120$
 $u + 5u = 120$
 $6u = 120$
 $u = 20;$
 $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
 $\frac{1}{f} = \frac{1}{20} + \frac{1}{100};$
 $\frac{1}{f} = \frac{5+1}{100} = \frac{6}{100}$
- $f = \frac{100}{6} = 16.67 \text{cm};$

(3mks)



16. (a) Causes Method of minimising
 Eddy currents Laminations
 Hysteresis loss/Magnetic reversals Use of soft iron
 Heating effect. (T^2R) Use of thick copper wires
 Magnetic flux leakage Winding secondary on primary/
 use of soft iron core.
 Any one, with correct method (2mks)

(b) $E = \frac{V_s \times I_s}{V_p \times I_p} \times 100\%;$ $E = \frac{\text{Power output}}{\text{power input}} \times 100\%$

80 $= \frac{50 \times 5 \times 100}{\text{Power input}} = \text{Power input} = \frac{50 \times 5 \times 100}{80}; = 312.5\text{w} = 312.5\text{w};$ (3mks)

(ii) $240 \times I_p = 312.5\text{w}$
 $I_p = \frac{312.5}{240}; = 1.302\text{ A};$ (2mks)

- (c) (i) Changing magnetic flux linking with the coil causes an induced current in the coil. (2mks)
 (ii) Increasing the speed of rotating of wheel; (1mk)

17. (a) Sound waves Electromagnetic waves
 Longitudinal Transverse
 Require material medium Do not require a material medium
 Have compressions and They have crests and troughs
 rare factions
 Particles moves parallel to wave Particles moves perpendicularly
 Motion to the wave motion.
 Any two pairs (2mks)

(b) (i) $2 \frac{1}{2} \text{ Waves} = 0.002 \text{ sec}$
 $1 \text{ wave} = \frac{0.002}{5} \times 2;$
 $= 0.0008 \text{ sec};$ (2mks)

$$(ii) V = \lambda f; \quad V = \frac{\lambda}{T} \quad 2m \times 0.0008 = \lambda;$$

$$\lambda = 0.0016m$$

$$\lambda = 1.6 \times 10^{-3}m;$$

(c)

$$d_2 = 1.25m$$

$$d_1 = 1.5m$$

$$d_1 = s \times t_1$$

$$= 1460 \times 1.5 = 2190 m;$$

$$d_2 = s \times t_2 = 1.25 \times 1460 = 1825m;$$

$$\text{height} = d_1 - d_2 = 2190 - 1825 = 365m.; \quad (3mks)$$

17. Photoelectric effect – The process of ejecting electrons from a metal surface when radiations of enough /sufficient energy falls on the metal surface.; (1mk)

(b) Energy of the radiation /frequency /wave length (any one); (1mk)

Any one;

$V_s (V)$	1.35	1.15	0.93	0.62	0.36
$\lambda \times 10^{-7}m$	3.77	4.04	4.36	4.92	5.46
$f (Hz) \times 10^{14}$	7.96	7.43	6.88	6.10	5.49

4 correct values all correct

(2mks)

(II) (i) Threshold frequency = $4.5 \times 10^{14} Hz$ (1mk)

$$(ii) \quad eV_s = hf - hf_0 \quad V_s = \frac{h}{e} f - \frac{hf_0}{e} \quad \text{Gradient} = \frac{h}{e}$$

$$(ii) \quad \text{Gradient} \frac{\Delta V_s}{\Delta f} = \frac{1.35 - 0}{(8.0 - 4.5) \times 10^{14}}; = \frac{1.35}{3.5} \times 10^{-14}$$

$$= 3.85 \times 10^{-15}$$

$$\therefore h = 3.85 \times 10^{-15} \times 1.6 \times 10^{-19};$$

$$= 6.16 \times 10^{-34} Js; \quad (3mks)$$

Frequency $\times 10^{14}$ (HZ)