KENYA NATIONAL EXAMINATION COUNCIL

KCSE 2009

PHYSICS

PAPER 2

MARKING SCHEME

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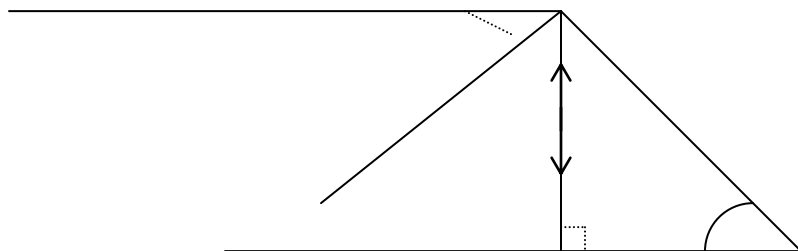
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SECTION A

1. Infinite (very many, uncountable, several

2.

3. Negative change

4. Allow gassing/ release of gases

    OR, release H_2 and O_2 produced at the electrodes

5. Increase the magnitude of l

    Increase the number of turns per unit length

    Use of U shaped iron core

6.   F = 0.5 sec

    F = 1/T

    = 1/0.5

    = 2 Hz

7. $1.33 = 3/v \text{ x } 10^5$

    $V = \dfrac{3 \text{ x } 10^5}{1.33}$

    $= 2.26 \text{ x } 10^8 \text{ m/s}$

8.   T = lA

9.   (L-q) cm

10.   (i)   Movement of magnet causes flux linkage to change

E.M.F is produced in the cell.

(ii)   When 1 flow from Q to P, a N. pole is created which opposes the approaching

pole (long's law).

11.   Increases in P d increases 1 in filament OR. Increase in P d increases heating effect this

produces more electrons by Thermionic Emission.

Hence results on more intense x - rays

12. $^{2d}/_{05} = {}^{2d}/_{0.6} + 34$ OR $V = {}^{d}/_{t}$

D = 17/0.2 = 85 m $= \dfrac{17 \times 2}{0.1}$

Speed $= \dfrac{2 \times 86}{0.5}$ = 340 m/s

= 340m/s

13.   Diode in (a) is forward biased while in 6 (b) is reversed biased Or Battery in 6 (a)

enhances flow of e. across the barriers while in 6 (b) barriers potential is increased.

SECTION B (55 MARKS)

14.   (a)   Capacitances decreases

Area of the overlap decreases

(b)

(i)   Parallel, Cp = 5 + 3 = 8 pf

Whole circuit ¼ + 1/8

C $= {}^{32}/_{12}$ = 2.6 + Pf

(ii)   Q = CV

= 8/3 x 12 PC

= 32 PC

(iii) B = Q/C   OR $Q_B = {}^{5}/_{8}$ x 32

$$= \frac{32 \times 10^6}{8 \times 10^6}$$

$= 4 \text{ V}$

$= 20 \text{ PC}$

$V_B = \frac{20 \times 10^{-6}}{5 \times 10^{-6}}$

$= 4V$

15. (a) Increase in 1 causes rise in temp

  Rise in temp causes rise in R

  (b) R = v/l

  $$\frac{2.5}{1.2}$$

  $= 2.1 \; \Omega$
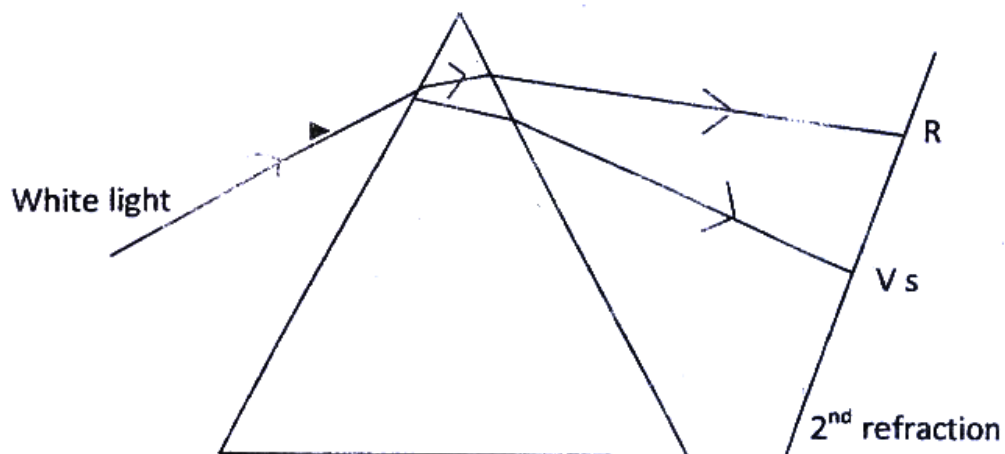
  (c) Read off P d across Y = P.O.V from graph

  (d) Power P = IV

  $= 0.8 \times 3$

  2.4 watts

16. (a) (i)

(ii)   Highest reading near red light

Red light has more heat than violet OR

Red light is close to ultra red which has more heat energy

(b)   Depth = 11.5 – 3.5 = 8.0 cm
        = $\frac{11.5}{8}$ = 1.4375

17.   (a) β = particle

(b) (i)   Ionizes attracted towards electrodes

Collusions with other molecules cause avalanche of ions which on attraction to

the electrodes causes the discharge.

(ii)   are attracted towards electrodes

Collusion with other molecules causes avalanche are of ions which on attraction

to the electrodes causes

(c) (i) x = 36

Y = 92

(ii)   Small, decreases in mass

Loss of mass

Mass defec

(iii)   Each of the neutrons produced at each collision further collision with Uranium

atom causing chain reaction.

18.   (a) (l) Electrons are emitted from Zn plate

Reduced of charge on the leaf

(ii)   Any electron emitted is attracted back to the electroscope

(iii)   Photons of infra red have to lower f than U – V have energy to eject to the

electrons.

(b) (i) Number of electrons emitted will increases

(ii)   Max K.E of the emitted electrons will increase

(c)   (i) $V = \lambda f_0$

$$F_0 = \frac{3.0 \times 10^8}{8.0 \times 10^{-7}}$$

$$= 3.75 \times 10^{14} \text{ Hz}$$

(ii) $W = hf_0$

$$= 6.63 \times 10^{-34} \times 3.75 \times 10^{14}$$
$$= \underline{2.49 \times 10^{-19}\text{J}} = 1.55 \text{ e V}$$

$\times 10^{-19}$

(iii) $KE_{MAX} = hf - hf_0$

$$= h (8.5 - 3.75) \times 10^{14}$$

$$= 6.63 \times 4.75 \times 10^{14}$$

$$= 3.149 \times 10^{-19} \text{ joules}$$

$$= 1.96828 \text{ e}$$

19.   (a)

(i)   Attach two identical dippers to the same vibrator, switch on and the circular

waves produced OR

Use one straight vibrator with two identical slits to produce coherent waves.

(ii)   Constructive - Bright

Destructive – Dar

(b)   C I –Two waves arrive at a point in phase

DI – Crest meets a trough and gives a zero intensity

- Path diff is ½ odd number of λ

ANSWERS:

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