KAPSABET HIGH SCHOOL

232/2 (Kenya Certificate of Secondary Education) Paper 2

INTERNAL MOCK EXAM

PHYSICS

Dec. 2020– 2 Hours

MARKING SCHEME

Instructions to candidates

a) *Write your Name, Index, Admission number and stream in the spaces provided above.*
b) *Sign and write the examination date on the spaces provided above.*
c) *This paper consists of Two sections; **A** and **B***
d) *Answer all the questions in sections A and B in the spaces provided*
e) *All workings **must** be clearly shown.*
f) *Non-programmable silent electronic calculators may be used.*
g) *All your answers must be written in the spaces provided in the question paper.*
h) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
i) Candidates must answer the questions in English.

SECTION A

1. 1. n = $\frac{360}{\theta} - 1$ √**1**

   S = $\frac{360}{\theta}$ -1

   θ = $\frac{360}{6}$ = 60^0√**1**

2. i. Polarization√**1**

   ii. Add a depolarizer/ an oxidizing agent√**1**

3. P= V1 = $\frac{V^2}{R}_2$ =36

   P= V1 OR $\frac{V}{R}$ OR = $\frac{6\times 6}{40}$ √**1**

   P= 0.9 W√**1**

4. Hammering makes the dipoles to vibrate√**1**
   Earth magnetic field aligns the dipoles√**1**

5. B- North pole√**1**
   A- South pole – Allow correct pole at one end
6. Number of divisions =4ms
   Time in milliseconds=4×200=800
   Period (T) = (800×10^{-3}) s=0.8s√**1**
   F=1/T = 1/0.8 =1.25HZ√**1**

7. √**1 each**

8. It forms a coating at the surface to prevent rusting and as an insulator

   It is less dense hence easy to carry

   It is easily available/cheaper **(Any TWO √1 each)**

9. Distance between a particle in the wave medium and the next one that is in phase with it or Distance between two successive crest/trough √**1**

10.

V=2d/t or $V = \frac{2\times 400}{2.5}$ √**1**

=320m/s √**1**

11. $\eta = \frac{2.2\times10^{8}}{2.0\times18^{8}}$ =1.1 √**1**

1.1= $\frac{Sin\ i}{Sin\ r} = \frac{Sin\ i}{Sin\ ◆◆}$ √**1**

Sin i= 1.1 ×Sin 30 =0.55

i= 33.37^{0}√**1**

12. √**1**

13. m=$\frac{◆}{◆}$ = 4 or v=4u √**1**

$\frac{◆}{◆} = ◆ + = \frac{◆}{} = \frac{-◆}{} = + ◆$ √**1**

$f_{◆}$ ◆ ◆◆ ◆◆ ◆

4u=60 u= 15cm √**1**

14. Ultra-Violet-√**1**

SECTION B

15. a) There is more divergent √**1** +ve charge attracts more electrons (-ve charge) from rod and the leaf.

(Reject movement of +ve charges)

Hence more positive charges created causing more repulsion √**1**

b) i)Is charge per potential difference **√1**

ii) By decreasing the distance between the plate

By increasing the overlapping area of the plates
By adding dielectric material between the plates (Any 2)

c) Parallel = y+4.

Total capacitance=product/sum√**1**

$= \frac{(y+4)10}{(y=4)+10}$=5µF√**1**

40+10y=20+5y+50

5y=70-40=30

Y=6µF√**1**

d) i. M is cathode√**1**

N is anode√**1**

ii. When the current flows, the filament gets heated **√1**

This causes electrons to be ejected/ removed from the cathode**√1**

iii. To prevent electrons from colliding and ionizing the air molecules inside **√1**

16. a) √**1**

b) i. Source producing sound waves of same frequency wavelength (hence speed0 and same or nearly same amplitude √**1**

ii. Alternate loud and soft sound√**1**

At loud sound, waves from L1 and L2 arrive in phase leading to constructive interference.

At soft/quite sound waves from L1 and L2 arrives out of phase leading to destructive interference. √**1**

c) √2

17. a i) Galvanometer deflects from zero to maximum them back to zero√1

There is a charging magnet linkage through which induce an emf in the coil√1

The indirect emf will cause an induced current to flow√1

ii) The galvanometer deflection will be in the opposite√1

iii) A higher deflection will result√1 since the rate of change of magnetic flux linkage will be higher√1

b) $\frac{Ns}{Np} = \frac{Vs}{Vp}$ *or* $\frac{Ns}{1200} = \frac{12}{240}$ √1

Ns =60 turns√1

c) E=hf√1

$6.63\times10^{-34}\times7.7\times10^{14} = 5.1051\times10^{-19}$J√1

$(5.1051<5.2)\times10^{-19}$ J√1

Hence photoelectric emission will not occur

Accept energy of radiation is less than work function of the metal surface√1

18. a) i. Current is charge per unit time **√1**

ii. Q=it **√1** $3\times10^{-6} = I\times60\times60$ **√1**

$I=\frac{3\times10^{-6}}{60\times60} = 5.56\times10^{-10}$A **√1**

b) i. R parallel: $\frac{12\times24}{12=24}$ =8Ω R total = 10+8 =18Ω **√1**

$V=\frac{18}{4}\times0.25$ **√1** =4.5V **√1**

ii. $A_1=\frac{12}{36}\times0.25$ **√1** = 0.083A **√1**

iii. A_2= 0.25-0.083= 0.167A **√1**

iv. V= ir or 0.5 = 0.25r **√1**

$r=\frac{0.5}{0.25}$ = 2Ω**√1**

19. a. i) (**√1 each)**

Rays **√1 f√1**

ii. At y-intercept 1/u =1/0.025=40

At x-intercept 1/v =1/0.025 =40cm

$f = \frac{40 \times 40}{2} = \frac{80}{2}$**√1**$= 40cm$**√1**

Apparatus **√1 showing v and u √1**