**MINCKS GROUP OF SCHOOLS**

**PHYSICS PAPER** 232/2

TERM 2 2022

FORM FOUR

MARKING SCHEME

|  |  |  |  |
| --- | --- | --- | --- |
|  | SECTION A (25 marks) |  |  |
| 1. | 700700700700 | 11 | CORRECT RAYSCorrect angles |
| 2 | The ends of the pin acquire the same polarity thus they repel each other. | 11 |  |
| 3.CF |  | 2 | Correct rays @ 1mkPosition and nature of image(real, upright,magnified) |
| 4. | The sound becomes faint/ magnitude of sound reducesOn cooling the partial vacuum is created which minimizes the transmission of sound which requires a medium. | 11 |  |
| 5. | **Radio waves , Microwaves, Infrared, X-rays,Red light.** | 1 |  |
| 6. | **Core****A****B** |  1 | Tied Both must be correct. |
| 7. | 1. Positive
2. Electrons flow to the sphere from the ground
 | 11 |  |
| 8. | 1. 1.52V
2.
 | 111 | Must extrapolate. If not deny.Correct symbolsCorrect arrangement(both marks tied) |
| 9. | V =f$λ$= 8 x 0.04=0.32m/s | 111 | Formula Substitution Answer  |
| 10. | 1. To increase the length of the conductor hence increasing the resistance.
2. High melting point
 | 11 |  |
| 11. | $$cost=\frac{1500}{1000}×\frac{30}{60}×6.70$$= Ksh. 5.025 | 11 | Evaluation Answer (check units) |
| 12. | **S****N****S**F | 11 | Correct magnetic field patternDirection of the force |
|  | SECTION B (55 marks) |  |  |
| 13. | 1.
2. The angle of incidence is equal to the critical angle of the transparent medium.
3. $ɳ=\frac{1}{\sin(C)}$

$ɳ=\frac{1}{\sin(50)}$ = 1.3051. v= -10cm

f = -15cm$$\frac{1}{f}=\frac{1}{u}+\frac{1}{v}$$$$\frac{1}{-15}=\frac{1}{u}+\frac{1}{-10}$$$$\frac{1}{u}=\frac{1}{-15}-\frac{1}{-10}=\frac{-2+3}{30}$$U = 30cmscreenLens Candle 1.
* The lens is placed between the lit candle and the screen.
* Adjust the position of the lens until a sharp focused image is formed on the screen.
* Record the object and image distance u and v.
* Use the les formula to determine the focal length f$$\frac{1}{f}=\frac{1}{u}+\frac{1}{v}$$
 | 1111111111 | FormulaSubstitution Answer Formula Substitution Answer Diagram  |
|  |  | 10 |  |
| 14. | 1.
2. Remains constant.
3. The leaf divergence increases.

There is increase in potential difference between the plates.Since there is decrease in capacitance (but the amount of charge remains constant and capacitance is given by C = Q/V)1.
2. $C\_{T}=\frac{7×1}{7+1}$

= 0.875μF or 8.75 x 10-7F1. Q= CV

= 8.75 x 10-7 x 12= 1.05 x 10-5 C$V\_{3μF}=12-\frac{1.05×10^{-5}}{1×10^{-6}}$ =12 – 10.5= 1.5V | 111111111 |  |
|  |  | 09 |  |
| 15. | 1.
2. The bulbs cannot be operated independently.
3.

To mainsL1L2L3S1S2S31.
2. Galvanometer deflects momentarily in one direction when the conductor moves upwards.

The galvanometer deflects momentarily in the opposite direction when the conductor moves downwards.1.
* Using stronger magnets
* Increasing rate of movement of the conductor/ moving conductor faster.
1.
* Primary coil
* Since more current flows through the primary coils they need to be thicker to minimize resistance.
 | 1111211 |  |
|  |  | 08 |  |
| 16. | 1.
2. The divergence of the leaf decreases/reduces.
3. No change on divergence of the leaf is observed.
4. $\frac{h}{e}=gradient$

$$=\frac{1.6-0.2}{\left(7-3\right)×10^{14}}$$$$=3.5×10^{-15}$$h =3.5 x 10-15 x 1.6 x10 -19h = 5.6 x 10 -34Js1.
2. P steps up the voltage used to accelerate the beam of electrons towards the target.
3. Electrons hitting part C possess high kinetic energy/moves at very high speed.

Most of its kinetic energy (about 99.5%) is converted to heat energy.1. By increasing the accelerating voltage/potential difference between the cathode and anode.
 | 111111111 |  |
|  |  | 09 |  |
| 17. | 1.
2. To produce two coherent sources of light.
3. Alternating bright and dark fringes are observed.

Bright fringes represent regions of constructive interference where the waves arrive in phase whereas the dark fringes represents regions of destructive interference where waves arrive out of phase.1. $f=^{v}/\_{λ}$

$$=\frac{2}{1}=2Hz$$V =fλ =2 x 0.4 =0.8m/s1. $T=4×\frac{10}{1000}=0.04s$

f = 1/T = 1/0.04 = 25Hz(b)(c)(+) | 111111111 |  |
|  |  | 09 |  |
| 18.  | 1.
2. Beta particles
3. 210 – 4 = 206
4. $50=200×\left(\frac{1}{2}\right)^{\frac{T}{t\_{\frac{1}{2}}}}$

$$\frac{1}{4}=\left(\frac{1}{2}\right)^{\frac{12}{t\_{\frac{1}{2}}}}$$$$2=\frac{12}{t\_{\frac{1}{2}}}$$$$t\_{\frac{1}{2}}=6 minutes$$1.

During the first half cycle, X is positive in respect to Q hence D1 is forward biased and D2 is reverse biased thus current flows through the load R using path XYRX.In the next half cycle when Q is positive in respect to X D2 is forward biased and D1 is reverse biased hence current flows through the load using the path QYRQ.In both cycles the current flows through the load resistor R in the same direction YR.1.

1.

C:\Users\gitonga\Desktop\CamScanner 07-28-2022 15.11.jpg | 111111111 | Must show workingLook out for alternative methodCapacitor across the load |