**TERM 2 2022**

**MID-TERM EXAMS**

**FORM 4 PHYSICS – 50MKS**

**TIME: 1 ½ HOURS**

**NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ADM \_\_\_\_\_\_\_\_\_\_\_ CLASS \_\_\_\_\_\_\_\_\_\_**

1. Explain why gases is faster in gases compared to liquids. (2mka)

2. A needle may float on clean water but sinks when a detergent is added. Explain. (1mk)

3. A body is projected vertically upwards from the top of the building. Assuming that it lands on the base of the building. Sketch the velocity time graph of the motion. (2mks)

4. State a reason why an air bubble increase in volume as it rises up the surface in a boiler. (1mk)

5. Explain why electric kettle with shiny out surface is more efficient compared to the dull kettle. (1mk)

6. Distinguish between real and virtual image. (1mk)

7. A pinhole camera forms an image of size 10cm. The object is 5M tail and 20m away from the pinhole. Find the length of the pinhole camera. (2mks)

8. Define the term principal focus for diverging lens. (1mk)

9. State any two factors that determine the heating effect by an electric current. (2mks)

10. Arrange the following in descending order of wave lengths. Infrared, X-rays, Gamma rays, micro waves and ultra violet. (2mks)

11. Explain the difference between soft and hard X rays. (2mks)

12. a. State the law of floatation. (1mk)

 b. Explain one way of destroying a magnet. (2mks)

13. State two factors that determine the capacitance of a parallel plate capacitor.

14. The figure below shows four capacitors connected to a battery of 12 volts.



1. Calculate the effective capacitance. (3mks)
2. Charge on 3.2 µ∫ capacitor. (2mks)
3. P.d across µ∫ capacitor. (2mks)
4. Energy stored in the 2µ∫. (2mks)
5. Give one application of capacitors. (1mk)

15. The table below shows the results obtained using different frequencies and their corresponding stopping potentials.

|  |  |  |
| --- | --- | --- |
| colour | Frequency of x1014 42 | Stopping potential V3(V) |
| Violet | 7.5 | 1.2 |
| Blue | 6.7 | 0.88 |
| Green | 6.0 | 0.60 |
| Yellow | 5.2 | 2.8 |
| Orange | 4.8 | 012 |

Draw a graph of potential V3 against frequency. (5mks)

11. Using the graph to find

a. Threshold frequency. (2mks)

b. Work function. (2mks)

16. a. Distinguish between angular and linear velocity. (1mk)

 b. Explain the difference of centripetal force from other force. (1mk)

c. A stone is whirled with a uniform speed in a horizontal circle having radius of 10cm. It takes the stone 10 seconds to describe an arc of length 4cm. Calculate

 i. Angular velocity (W) (3MKS)

 ii. Linear velocity V of the stone. (3mks)

 iii. The period time T (2mks)