NAME.......................................................... .INDEX NO......................

SIGN............................................................... DATE......................

**The Nakuru sub-county joint mock**

**Physics paper 232/2**

**Time 2hrs**

**This paper consist of two sections, A and B**

**Answer all the questions from both sections in the spaces provided.**

**All working must be clearly shown. Mathematical tables and silent electronic calculator may be used.**

**For Examiner’s Use Only**

|  |  |  |  |
| --- | --- | --- | --- |
| **Section**  | **Question**  | **Maximum Score** | **Candidate’s Score** |
| **A** | 1-12 | 25 |  |
| **B** | 13 | 15 |  |
| 14 | 13 |  |
| 15 | 15 |  |
| 16 | 12 |  |
|  | **TOTAL****SCORE** | **80** |  |

 **Section A (25mks)**

1. The figure 1 shows a ray of light incidence on a plane mirror. Complete the diagram to show the reflected ray and deter*m*ine the angle of incidence. (2mks)

 350

1. What prove that light travels in a straight line? (1mk)
2. Metals are normally charged by contact or induction method. State two facts that make this possible.(2mks)
3. Distinguish between an Anode and Cathode in terms of flow of electric current. (2mks)
4. Figure 2 shows two bar magnet. Draw the magnetic field patterns round the magnet. (2mks)

N S

N S

1. State two ways of maintaining a dry cell. (2mks)
2. A battery of e.m.f 6.4V drives a current of 0.4A through a circuit with an external resistance of 15Ω. Determine the internal resistance of the battery. (3mks)
3. You are provided with three capacitors of capacitance 4µf, 3µf and 2µf. Draw a circuit diagram to show how the three capacitors can be connected to give an effective capacitance of 2µf.(2mks)
4. Define Kilowatt-hour. (1mk)
5. A GM tube records a count rate of a certain radioactive element as 820c/s. The half-life of this element is36s. If the background count is 100c/s. calculate the total time taken for the activity of this element to fall to 122.5c/s. (3mks)
6. State the advantages of transmitting Mains Electricity at high voltage. (H.T.T) (2mks)
7. Distinguish between hard and soft X-rays. (2mks)

**Section B (55mks)**

1. a) Distinguish between transverse waves and longitudinal waves. (2mks)

b) Plane water waves travels from a deep end into a shallow end in a swimming pool at a velocity of 4m/s. if the wavelength of these waves in deep end is 6cm and in the shallow end is 1.5cm, determine the velocity of these waves in the shallow end. (3mks)

 c) State **one** factor that affects the velocity of sound in a solid. (1mk

 d) A disc siren with 200 holes is rotated at constant speed making 0.5 revolutions per second. If air is blown towards the holes, calculate:

 i) The frequency of sound produced. (3mks)

 ii) The wavelength of the sound produced if velocity of sound in air is 340ms-1 (2mks)

 e) The human ear can distinguish between two sounds as separate only if they reach it at least 0.1s apart. Determine the distance from the wall where one should be in order to hear an echo if the velocity of sound in air is 340m/s. (3mks)

 f) How are echoes reduced in a room? (1mk)

14) a) Define the term critical angle. (2mks)

 b) State one major reason why prisms are preferred over mirrors in periscopes. (1mk)

 c) State two conditions necessary for total internal reflection to occur. (2mks)

 d) The figure below shows a ray of light incident on one side of a glass prism. Complete the ray diagram to show how the ray is

dispersed.

Screen

White light

(3mks)

 c) Define the term accommodation as used in the human eye. (2mks)

 d) Light travels from water at a velocity of 2.26x108 ms-1 and enter glass travelling at a velocity of 2.0x108ms-1 Calculate the refractive index of glass with respect to water. (3mks)

.15)a) Define the term photoelectric effects. (2mks)

 b) The table 2 below shows stopping potential (volts) and frequency obtained from an experiment of photoelectric emission.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Stopping potential (volts) | 0.6 | 1.0 | 1.4 | 1.8 | 2.2 | 2.6 |
| Light frequency X 1014(Hz) | 6.0 | 7.0 | 8.0 | 9.0 | 10.0 | 11.0 |

Plot a graph of stopping potential (y-axis) against frequency. (5mks)

From the graph determine:

(i) The threshold frequency and wavelength. (Velocity of light c=3.0x108m/s) (3mks)

(ii) The planks constant. (Charge of an electron= 1.66x10-19C) (3mks)

(iii) The work function (2mks)

16) a) State two physical conditions of a conductor, necessary for Ohm’s law to hold. (2mks)

 b) Two resistors P and Q are connected in the gaps of a meter bridge. A balance point is found when the movable contact touches the bridge wire at 65cm from the end joined to P. If the value of P is 20Ω, find the value of Q. (3mks)

 c) State one precaution to be taken while using a meter bridge. (1mk)

 d) the figure 4 shows a the structure of a bicycle dynamo. Use it to answer the following questions.

Bulb

Axle

Cylindrical magnet

Soft iron core

Explain how the above dynamo works. (3mks)

1. How could a large e.m.f be produced? (2mks)

 iii) State the difference between this generator and those in power station. (1mks)