



MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education
PRE-MOCK EXAMINATIONS 2023

232/2

PHYSICS
April 2023 – 2 Hours

Paper 2

Name:Adm No:

Class:Candidate's Signature: Date: 13/4/2023.

Instructions to candidates

- This paper consist of TWO sections; A and B. Answer ALL the questions in section A and B in the spaces provided.
- ALL working MUST be clearly shown. Mathematical tables, electronic calculators and slide rules may be used.
- Candidates should check the question paper to ensure that all the 11 pages are printed as indicated and that no questions are missing.
- Take:

For Examiner's Use Only

SECTION	Question	Maximum Score	Candidate's Score
A	1-10	25	
B	11	11	
	12	13	
	13	10	
	14	10	
	15	11	
TOTAL		80	

SECTION A (25 MARKS)

Attempt ALL questions in this section in the spaces provided

1. State two factors which determine the velocity of sound in air. (2 marks)

.....
.....

2. Explain why electric power is not transmitted at low voltage (1 mark)

.....
.....

3. (a) State one similarity between X-rays and gamma rays (1 mark)

.....
.....

- (b) State one difference between X-rays and gamma rays (1 mark)

.....
.....

- (c) Describe one safety measure to be taken when handling these radiations. (1 mark)

.....
.....

4. **Figure 1** shows a wave moving through a convex section of a medium.

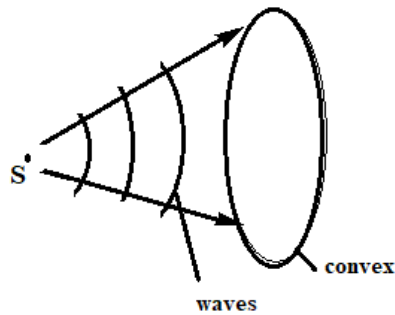


Figure 1

- (a) Complete the diagram to show the path of the rays (1 mark)

- (b) State the property of waves illustrated above (1 mark)

.....

5. When an object is placed 12 cm from a concave mirror, an image of height 4 cm is formed 24 cm from the mirror. Find the height of the object (2 marks)

.....

.....

.....

6. **Figure 2** shows two plane mirrors M_1 and M_2 are inclined to each other at an angle of 70° .

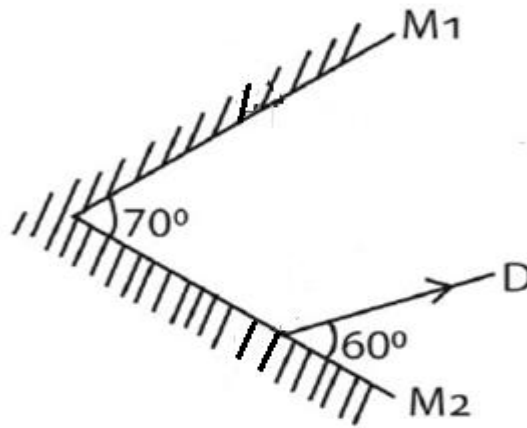


Figure 2

If ray D is reflected ray from mirror M_2 , complete the path of the rays and hence determine the angle of incidence of on M_1 (3 marks)

.....

.....

7. The p.d across a resistance wire is 12V. Find the quantity of electric charge flowing through the wire to generate 1.68 kJ of heat energy in one second. (3 marks)

.....

.....

.....

8. .
 (a) What is a hard magnetic material? (1 mark)

.....

.....

(b) **Figure 3** shows a soft iron bar and a steel bar are suspended inside a coil above a container of iron filling.

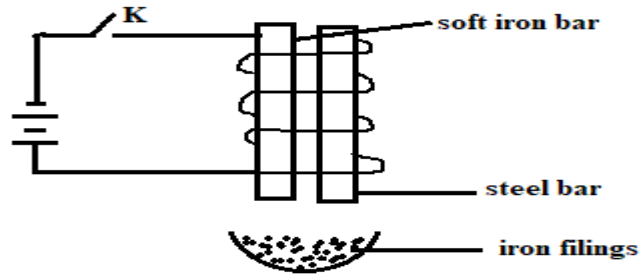


Figure 3

Explain what is observed when switch K is closed (2 marks)

.....

.....

.....

9. **Figure 4** shows a sound wave produced from a tuning fork vibrating at 800 Hz

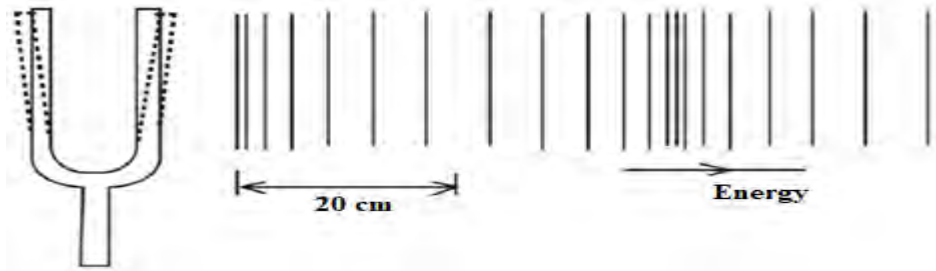


Figure 4

Calculate the velocity of the wave in the medium. (3 marks)

.....

.....

.....

10. .

(a) When a charged glass rod is brought near a gold leaf electroscope, the leaf diverges but fall again when the rod is removed. Explain the observations (2 marks)

.....

.....

.....

(b) State any one precaution that should be observed when working with an electrostatic device. (1 mark)

.....

SECTION B: (55 MARKS)

Attempt ALL questions in the spaces provided

11. **Figure 5** shows an object O placed in front of a pinhole camera. Use it to answer the questions that follow;



Figure 5

(a) Use ray diagrams to locate the position of image (2 marks)

(b) State the characteristics of the image formed (3 marks)

.....

.....

.....

(c) Increasing the size of the pinhole makes the image to be brighter but blurred. Explain why the image is;

(i) Brighter (1 mark)

.....

.....

(ii) Blurred (1 mark)

.....

.....

(d) An object 1.6 m long is placed 8m from a pinhole camera which is 20 cm long.

(i) Calculate the height of the image (2 marks)

.....

.....

.....

(d)

(i) By completing the diagram in **figure 6(a)** explain shortsightedness of the eye (3 marks)

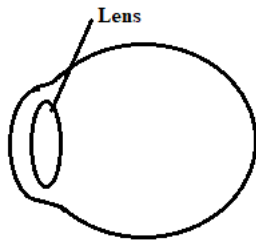


Figure 6(a)

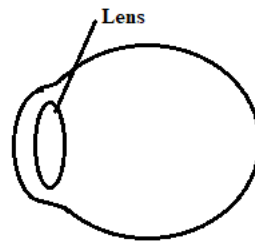


Figure 6(b)

.....

(ii) Complete the **Figure 6(b)** to illustrate how the above defect is corrected (2 marks)

13. **Figure 7** shows a ray of white light incident on a glass prism.

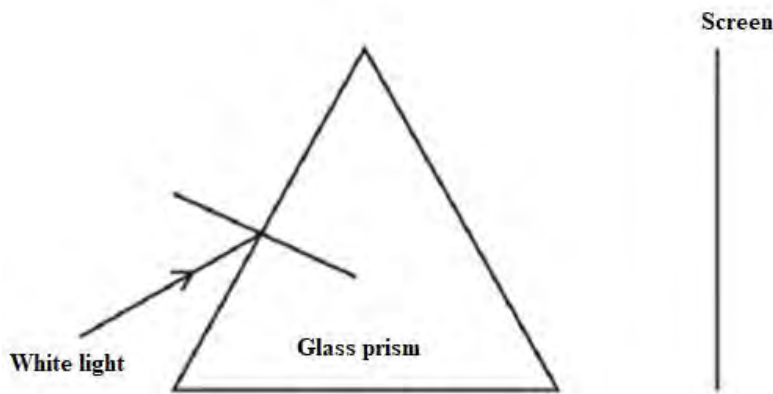


Figure 7

(a) Complete the diagram to show effect of the glass prism on the ray. (2 marks)

(b) State two effects caused by the glass prism on the white light (2 marks)

.....

(c) Find the critical angle for glass in air if the refractive index of the glass is 1.5. (3 marks)

.....

(d) State what happens when the above critical angle is exceeded (1 mark)

.....

(e) **Figure 8** shows how a mirage is formed. Complete the diagram to show how the mirage is formed and seen by the eye (2 marks)



Figure 8

14. .

(a) State the reason why soft iron is laminated (1 mark)

.....

(b) State one property of soft iron that makes it suitable for use as a transformer core (1 mark)

.....

(c) **Figure 9** shows a step-down transformer..

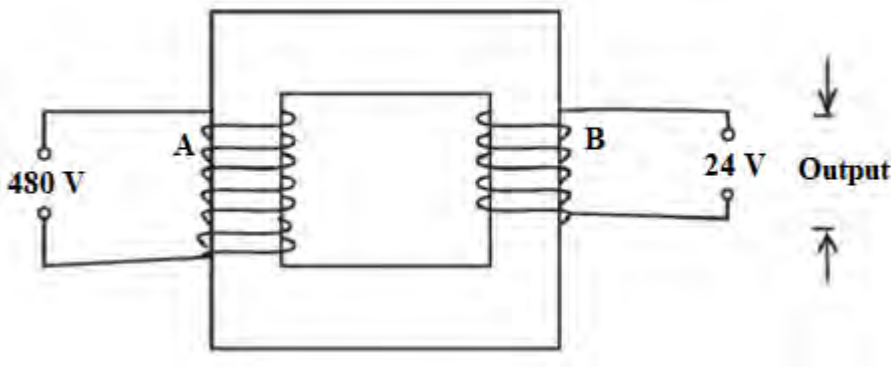


Figure 9

(i) Name the coils marked A and B (2 marks)

.....

- (ii) If the transformer is used to step down mains supply from 480 V to 24V and coil A has 800 turns, determine the number of turns in coil B. (3 marks)

.....

.....

.....

- (d) **Figure 10** shows pendulum A and pendulum B freely suspended between the poles of identical magnets. Pendulum A is made of thick copper plate while B is made of copper plate with slots

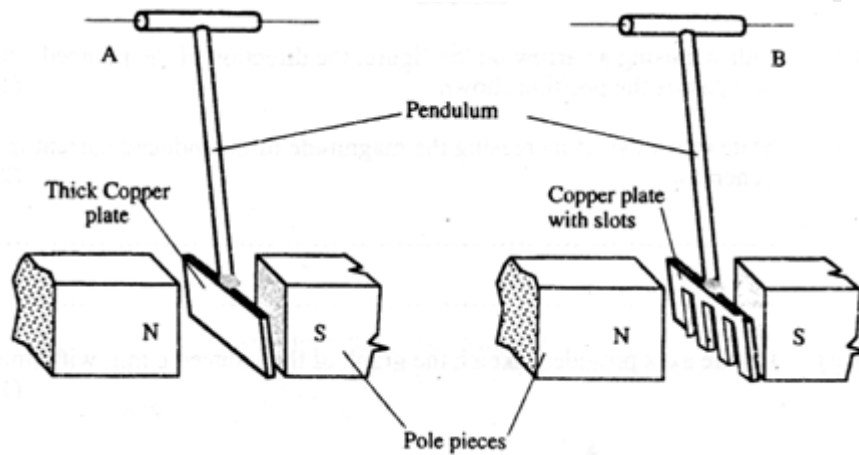


Figure 10

- (i) When the two are set to swing, it is observed that A slows down faster than B Explain this observation. (2 marks)

.....

.....

.....

- (ii) State one application of the concept illustrated in pendulum A (1 mark)

.....

15. .

- (a) **Figure 11** shows three capacitors of capacitance $3\mu\text{F}$, $2\mu\text{F}$, $6\mu\text{F}$ and 12V supply connected in a circuit.

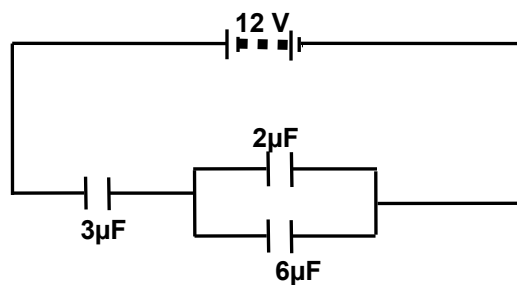


Figure 11

Calculate:

- (i) The total capacitance of the circuit. (2 marks)

.....

.....

.....

- (ii) The charge stored in the circuit. (2 marks)

.....

.....

.....

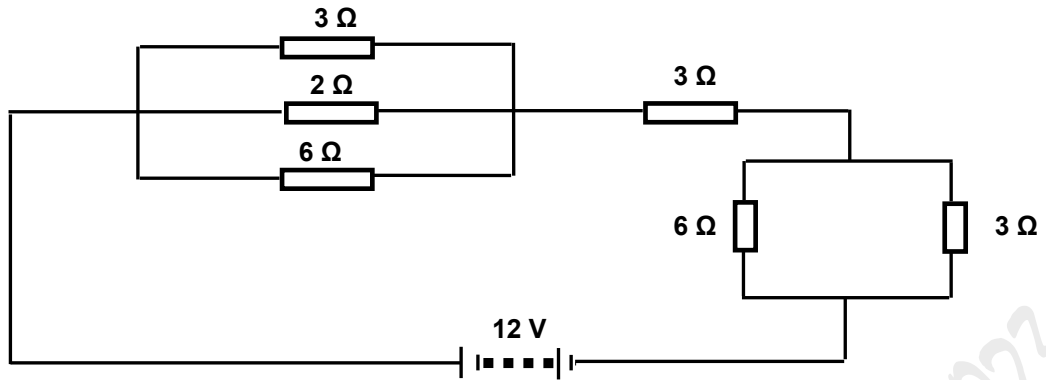
- (iii) The potential difference across the $6\mu\text{F}$ capacitor. (2 marks)

.....

.....

.....

(b) **Figure 12** shows an arrangement of resistors. Use it to answer questions that follow.



(i) Calculate the total resistance in the circuit. (3 marks)

.....

.....

.....

(ii) Calculate effective current in the circuit. (2 marks)

.....

.....

.....