CANDIDATE NUMBER: _____

CENTRAL EAST EDUCATION DIVISION

2023 MALAWI SCHOOL CERTIFICATE OF EDUCATION
MOCK EXAMINATION

PHYSICS

Friday, 24th March **Subject Number: M164/I**

Time allowed: 2 hours

PAPER I

(100 marks)

Instructions

1. **This paper contains 15 printed pages. Please check.**
2. Fill your **Examination Number** at the top of each page.
3. This paper contains two sections **A** and **B**. In **Section A,** there are **ten** short answer questions while in **section B** there are **three** restricted essay questions**.**
4. Answer all the **thirteen questions** in the spaces provided.
5. Use of electronic calculators is allowed.
6. The maximum number of marks for each answer is indicated against each question.
7. In the table provided on this page, **tick** against the question number you have answered.

Question Number	Tick questions answered	Do not write in these columns	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
Total			

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SECTION A (70 marks)

Answer ***all*** questions in this section

1. (a) Give any ***two*** ways of communicating experimental results

_____

_____

(2 marks)

(b) **Figure 1** is a diagram showing part of a Vernier calliper.

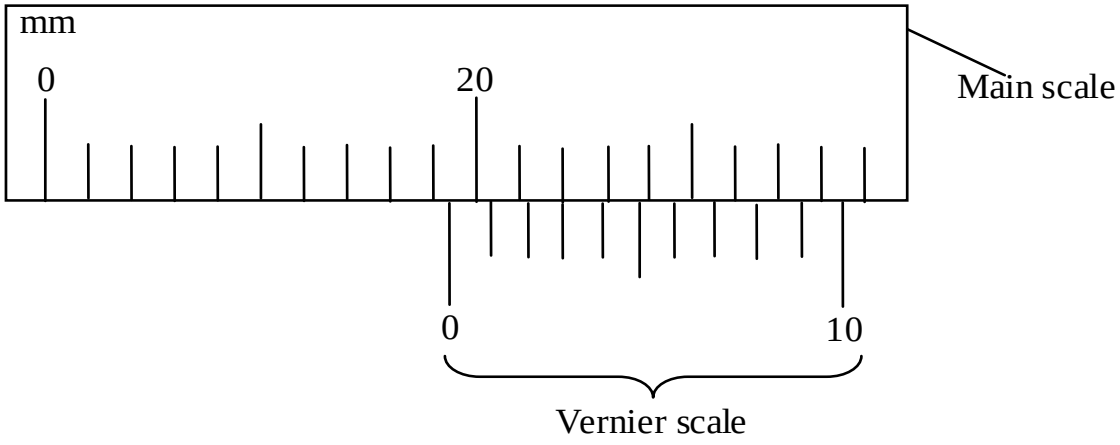

Figure 1

What is the value of the reading shown on the Vernier calliper above? (**Show your working**)

(4 marks)

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c. Give ***one*** importance of repeating tests during an experiment?

_____

(1 mark)

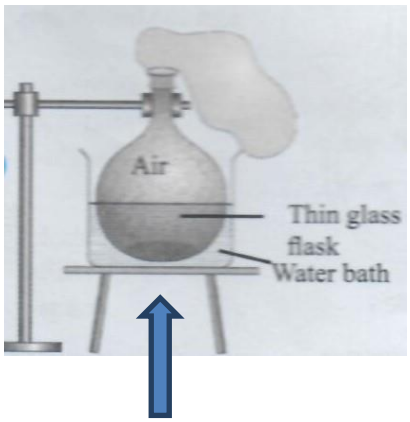
2. (a) Define **absolute zero**

_____

_____

(1 mark)

Figure 2 below shows a diagram of a conical flask, fitted with a balloon.



heat

Figure 2

(b) (i) What would happen to the balloon after heating?

_____

(1 mark)

(ii) Explain the answer to ***2(b) (i)*** above

_____

_____

_____

_____

_____

(4 marks)

c. Give any ***one*** factor that affects magnitude of upthrust

_____

(1 mark)

3. a. What does the term **resultant vector** mean?

_____

_____

(1 mark)

b. Differentiate between ***speed*** and ***velocity***

_____

_____

(2 marks)

c. State "**Ohm's law**"

_____

_____

(1 mark)

d. Calculate the pressure at the bottom of the container of height 40cm if the density of water is 1000kg/$m^{3.}$ (Take ***g*** as 10N/kg)

(3marks)

4. a. State "**Hooke's law**"

_____

_____

(1mark)

b. **Figure 3** shows a system of two identical springs each of spring constant of 3N/mm.

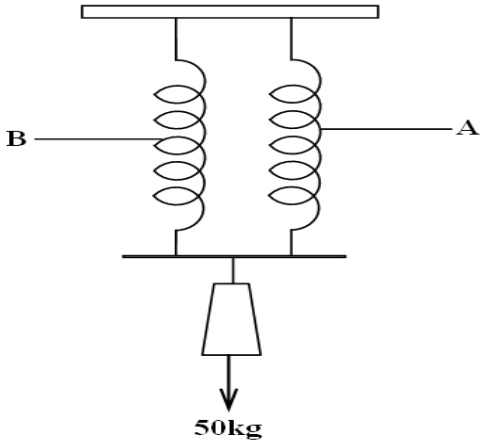


Figure 3

Find the total extension of the spring system above.

(4 marks)

c. Differentiate between ***heat*** and ***temperature***.

_____

_____

_____

_____

(2 marks)

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5. a. Mention ***any two*** ways of reducing frictional force.

_____

_____

(2 marks)

b. A man drags a 50kg bag of maize along a horizontal rough surface with a force of 200N. Calculate the coefficient of static friction between the bag and the surface.

(3 marks)

c. Mention any ***two*** causes of power loss in a transformer

_____

_____

(2 marks)

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6. a. A motor cyclist accelerates from 20 m/s to 50 m/s in 20 seconds. Calculate the acceleration of the motor cyclist.

(3 marks)

b. **Figure 4** is a diagram showing a ball bearing falling in water.

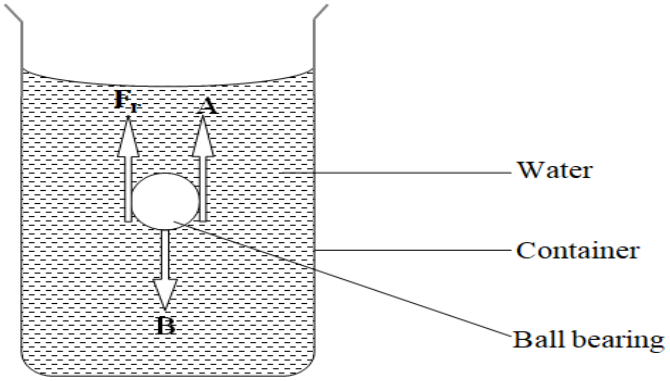

Figure 4

Name the forces

A:_____

(1 mark)

B:_____

(1 mark)

c. Mention any ***two*** hazards associated with electricity

_____

_____

(2 marks)

7. a. State any ***two*** examples of circular motion

_____

_____

(2 marks

b. A bicycle wheel makes **60 revolutions per minute**. Calculate the **angular velocity**

(4 marks)

c. Define the term "**centre of mass"**

_____

_____

(1 mark)

8. a. Give any ***two*** properties of waves

_____

_____

(2 marks)

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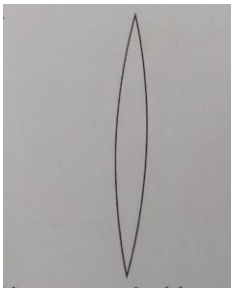
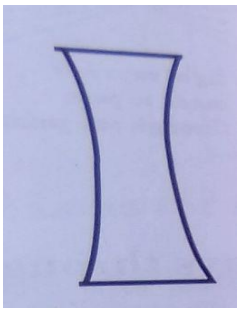
Figure 5 is a diagram showing two lenses, **A** and **B.** Study them and answer the questions that follow.





A **B**

Figure 5

b. (i). Identify lenses ***A*** and ***B***

A_____ (**1 mark**)

B_____ **(1 mark)**

c. State ***one*** difference between lens ***A*** and ***B***

_____

_____

_____

(2marks)

d. State ***one*** factor that affects loudness of sound

_____

(1 mark)

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9. (a) An object placed **15 cm** in front of a converging lens produces an image at a distance of **30cm** from the lens. Calculate the focal length of the lens.

(4 marks)

b. Describe any ***one*** factor that affects fluid friction.

_____

_____

_____

_____

(3 marks)

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10. a. **Figure 6** is a diagram showing magnetic field formed by a straight wire passed through a cardboard.

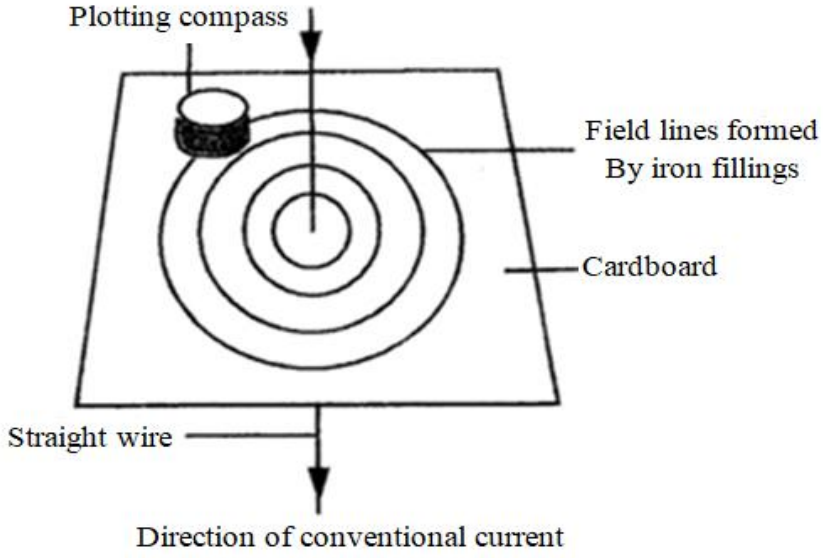

Figure 6

(i) Draw an arrow in the plotting compass indicating the direction of magnetic field line **(1 mark)**

(ii) What would happen to the direction of the plotting compass if the terminals of the power supply are reversed?

_____

_____

(1 mark)

(iii) Give the reason for your answer to **10 a (ii)**

_____

_____

_____

(2 marks)

b. The ***Figure 5*** below shows the deflection of radiation in an electric field.

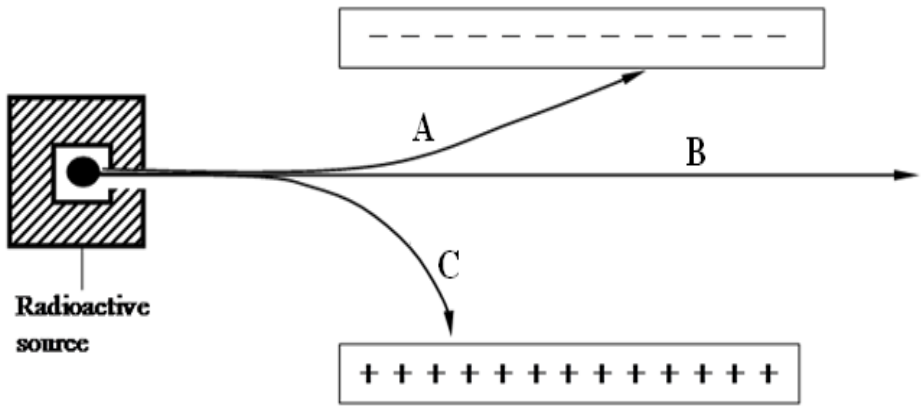

Figure 5

i. Name the radiation

A: _____ **(1 mark)**

C:_____ **(1 mark)**

ii. Give the reason for why ***B*** is not deflected

_____

_____

(1 mark)

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Section B (30 marks)

Answer ***all*** questions in this section

11.a. With the aid of a well labelled diagram, describe how a manometer is used to measure lung pressure.

_____

_____

_____

_____

_____

_____

_____

(6 marks)

b. Explain how temperature affects conductivity of semiconductors

_____

_____

_____

_____

_____

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12.a. With the aid of a diagram explain how a zener diode works to protect electrical device from damage

_____

_____

_____

_____

_____

(6 marks)

b. Describe how you would determine the focal length of the converging lens by focusing the image of a distant object

_____

_____

_____

_____

_____

_____

_____

_____

_____

(4 marks)

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13.a. Describe how ***one*** can detect radiations using Geiger Muller tube

_____

_____

_____

_____

_____

_____

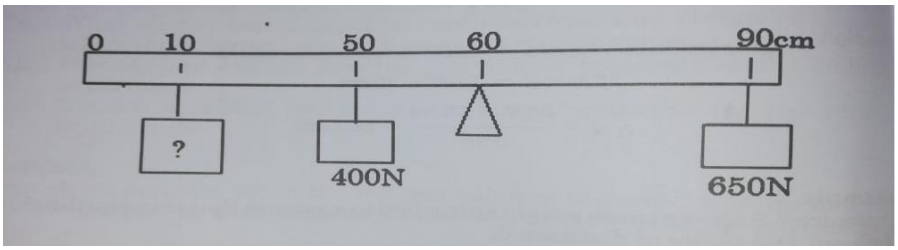
_____

_____

_____

(5 marks)

b. **Figure 7** a ruler balanced when pivoted at the 60 cm mark under the conditions shown in the diagram



Calculate the value of the weight ***W*** (which is replaced by ***?*** in the figure 7 above) placed at 10 cm length

(5 marks)

END OF QUESTION PAPER!