

Name:Index.No.

Adm No.....Class.....

School.....Candidate's Signature:

232/1

PHYSICS

THEORY

Paper 1

JULY 2026

Time: 2 hours

RCEA JOINT EXAMINATION
Kenya Certificate of Secondary Education
PHYSICS
PAPER 1

Instructions to Candidates

- Write your name, admission number, class and signature in the spaces provided at the top of the page. This paper consists of two sections; **A** and **B**.
- Answer **ALL** the questions in the spaces provided.
- Mathematical tables and electronic calculator may be used.
- This paper consists of 10 printed pages.
- Candidates should answer the questions in English
- You may use the following constants where necessary:-

$$g = 10 \text{ N/kg, or m/s}^2$$

$$\text{Density of water} = 1000 \text{ kg/m}^3$$

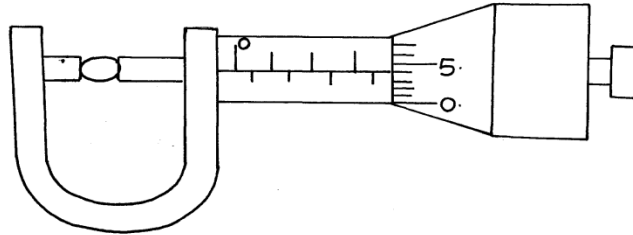
FOR EXAMINER'S USE ONLY

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 – 11	25	
B	12	09	
	13	11	
	14	11	
	15	12	
	16	12	
TOTAL SCORE		80	

SECTION A (25 MARKS)

Answer all the questions in this section in the spaces provided.

1. Figure 1. shows a micrometer screw gauge being used to measure the diameter of a ball bearing.



If the instrument has a negative zero error of 0.01mm, record the actual diameter of the ball bearing. (1mk)

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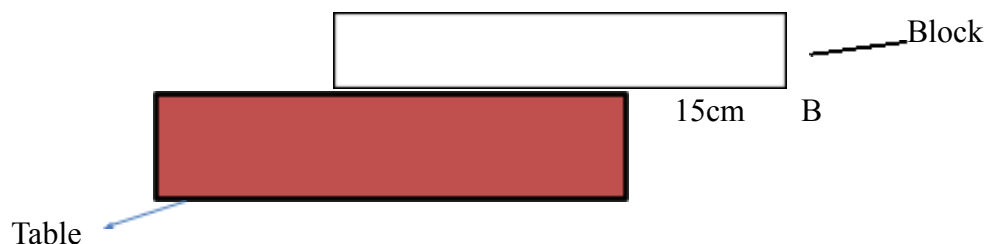
2. The acceleration due to gravity on Jupiter is about 2.6 times that on earth. A spacecraft has a weight of 24500N on earth.

a) What is the mass of the spacecraft? (1 mark)

b) What would be the weight on Jupiter? (take acceleration due to gravity on earth as 10N/Kg) (2 marks)

3. The height of mercury column in a barometer density 13600kg/m^3 , at a place is 64cm. What would be the height of a column of paraffin in barometer at the same place. (Density of paraffin = $8.0 \times 10^2 \text{ kg/m}^3$). (3mks)

4. The figure below shows a uniform block of mass 10kg and length 35cm lying on a table. It hangs over the edge of the table by 15cm.



Determine the minimum force that can be applied on the block at point B to make it turn about the edge of the table. (3marks)

5. Compare diffusion of chlorine gas in room temperature and during a hot afternoon.

(2marks)

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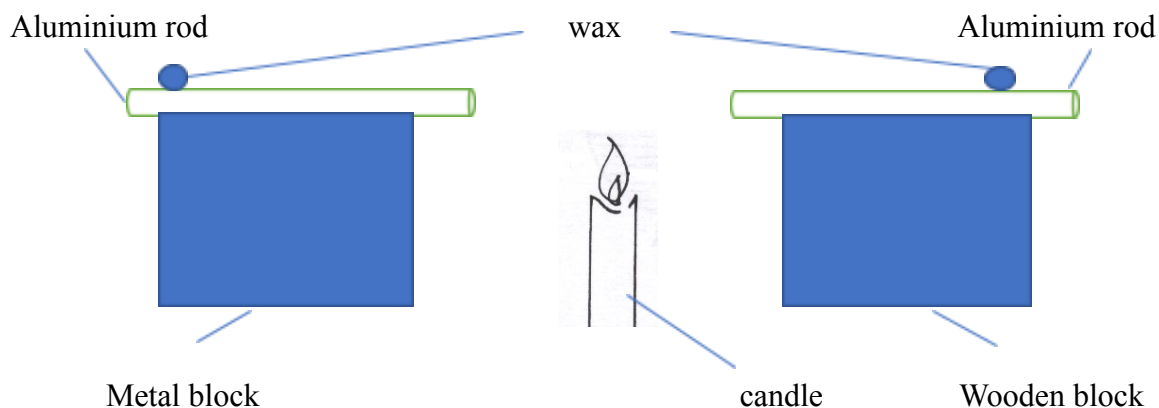
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6. Two identical aluminum rods are placed as shown in the figure below. One rests on a metal block and the other on the wooden block. The protruding ends are heated on a Bunsen burner as shown below:



State with reason in which bar the wax is likely to melt

(2marks)

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7. An ungraduated mercury thermometer attached to a millimeter scale reads 24mm in ice at 0°C and 250mm in steam of water at 100°C. Calculate its reading on a day when the temperature is 30°C. (3marks)

8. Sketch a pulley system with a velocity ratio of 4 using 3 pulleys

(2marks)

9. Explain why a Bunsen burner has a wide heavy base

(2marks)

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10. Why is the capillary bore of liquid in glass thermometer narrow

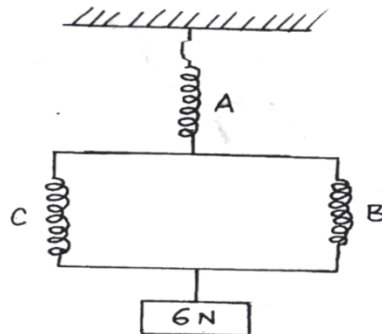
(1mark)

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11. Figure 3 shows three identical springs each of spring constant 4.5N/m and negligible weight are used to support a load as shown. Determine the total extension of the system. (3mks)



SECTION B 55 MARKS(ANSWER ALL QUESTIONS IN THIS SECTION)

12. a). Differentiate between Elastic and Inelastic collisions

(1mk)

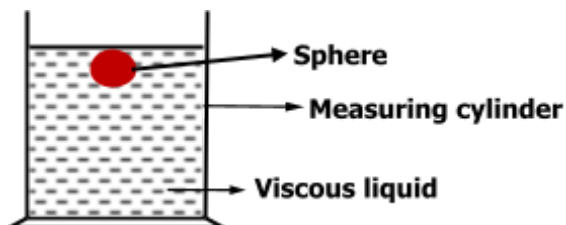
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(b) The figure below shows a sphere moving in a viscous liquid in a tall measuring cylinder. Indicate any the forces acting the sphere. (1mk)



(c) A body of mass 150kg traveling at constant velocity of 20m/s collides with a stationary object of mass 90kg. If the impact takes 3s before the two move together at a constant velocity for 20s. Find; Their common velocity. (3mks)

(d) An object is projected horizontally at a velocity of 40m/s from a cliff 20m high. Calculate:

a) The time taken to hit the ground.

(2mks)

b) The distance from the foot of the cliff when the object hits the ground.

(2mks)

13. (a) What is meant by the term “Banking” in roads? (1mk)

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(b) A stone is tied to a light string of length 0.5m. If the stone has a mass of 20g and is swung in a vertical circle with a uniform angular velocity of 6 revolutions per second, determine.

(a) The period T. (2 mks)

(b) The tension of the string when the stone is at
(i) The bottom of the swing. (3 mks)

(ii) The top of the swing. (2 mks)

(iii) The linear velocity. (3 mks)

14. (a) State the law of floatation.

(1mk)

(b) A balloon of negligible weight and a capacity of 100m^3 . It is filled with helium of density 0.18Kg/m^3 and is floating in air of density 1.2 Kg/m^3 .

Calculate

(i) The upthrust on the balloon

(3mks)

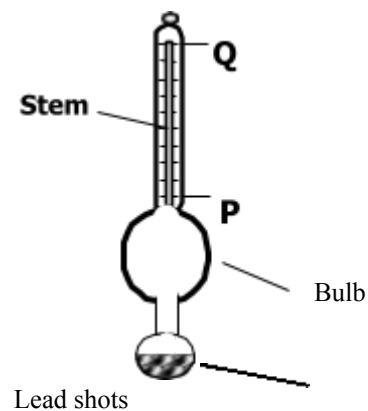
(ii) Weight of helium

(2mks)

(iii) Lifting force on the balloon

(2mks)

c) Figure shows a simple hydrometer.



i) State the reason why the bulb is wide.

(1mk)

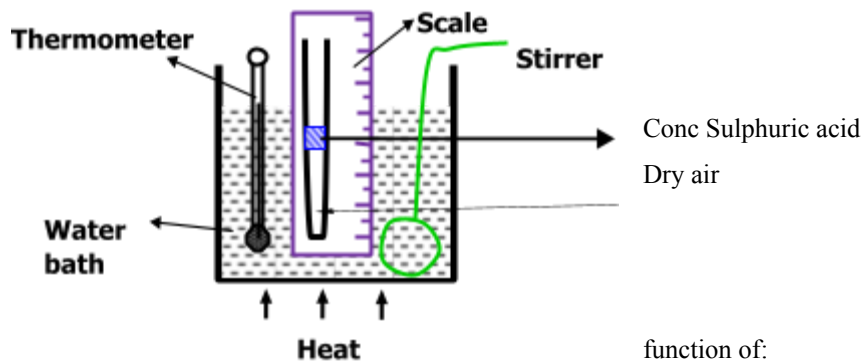
ii) State the purpose of the lead shots in the glass bulb

(1mk)

iii) How would the hydrometer be made more sensitive?

(1mk).

15. The diagram in figure below shows an experiment to investigate the relationship between volume and temperature of a fixed mass of gas at constant pressure.



- (a) Explain the

(i) Concentrated sulphuric acid

function of:

(2mks)

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(ii) Stirrer

(1mk)

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- (b) Which measurements are taken in the above experiment

(2mks)

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- c) State law being investigated in the experiment above.

(1mk)

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- d) Describe how the experiment above is used to verify the law.

(4mks)

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- e) A gas has a volume of 20cm^3 at 27°C and normal atmospheric pressure. Calculate the new volume of the gas if it is heated to 54°C at the same pressure.

(2mks)

16. a) Define specific latent heat of vaporization of a substance. (1mk)

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b) In an experiment to determine the specific latent heat of vaporization of water, steam at 100°C was passed into water contained in a well-lagged copper calorimeter. The following measurements were made:

- Mass of calorimeter = 50g
- Initial mass of water = 70g
- Final mass of calorimeter + water + condensed steam = 123g
- Initial temperature of water = 5°C
- Final temperature of mixture = 30°C

(Specific heat capacity of water = $4200 \text{ J kg}^{-1}\text{K}$ and specific heat capacity for copper = $390 \text{ J kg}^{-1}\text{K}^{-1}$)

Determine the

i) Mass of condensed steam. (2mks)

ii) Heat gained by the calorimeter and water (3mks)

iii) Given that L is the specific latent heat of evaporation of steam

(i) Write an expression for the heat given out by steam (3mks)

(ii) Determine the value of L . (3mks)