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SET 2

GRADE 10 END OF YEAR EXAMS

KENYA CERTIFICATE OF BASIC EDUCATION

SENIOR SCHOOL ASSESSMENT

GRADE 10 – PHYSICS

Time: 2 Hours

LEARNER'S DETAILS

Name: _____. **School:** _____.

Assessment Number: _____. **Date:** _____.

School Code: _____. **Signature:** _____.

INSTRUCTIONS TO CANDIDATES

1. Write the details as required in the spaces above.
2. This paper consists of two sections: A and B.
3. Answer all questions in section A and section B.
4. Answer the questions in English.
5. All answers MUST be written in the spaces provided in the paper.
6. Do NOT remove any page from this question paper
7. Silent non programmable calculators may be used.
8. Assume:

    i. Acceleration due to gravity, **g = 10 m/s²**
    ii. Density of water = **1000 kg/m³**

FOR OFFICIAL USE ONLY

SECTION	SECTION A	SECTION B	% SCORE	EE1	EE2	ME1	ME2	AE1	AE2	BE1	BE2
SCORE RANGE	30 MARKS	60 MARKS		90-100	75-89	58-74	41-57	31-40	21-30	11-20	1-10
POINTS				8 POINTS	7 POINTS	6 POINTS	5 POINTS	4 POINTS	3 POINTS	2 POINTS	1 POINT
LEARNER'S TOTAL SCORE											

SECTION A (30 MARKS)

Answer ALL questions in this section.

1. At **Shankoe Senior School**, three learners are discussing the relevance of Physics in Kenya.

   Mwende: "I want to be a Telecommunications Engineer because I love the **Electronics** branch."

   Kiprono: "I am interested in how engines work, which falls under **Mechanics**."

   Achieng: "I want to study the stars and the universe, which is **Astronomy**."

(a) **Identify** the branch of Physics that deals with the study of heat and temperature. (1 mark)

_____

(b) **Match** the learner to the most relevant career path: (2 marks)

Mwende: _____

Achieng: _____

(c) **State** one relationship between Physics and Geography. (2 marks)

_____

_____

2. **Zavai**, a Grade 10 learner in **Mombasa**, uses a drinking straw to enjoy some juice by the beach. Study the diagram below.

(a) **Explain** the role of atmospheric pressure in making the juice rise up the straw. (2 marks)

_____

_____

(b) **Identify** the factor labeled h in the formula $P=\rho gh$ used to calculate pressure at the bottom of the ocean in **Kilifi**. (1 mark)

_____

(c) **Name** the hydraulic machine shown below and state the principle it uses. (2 marks)



Name:

_____

Principle

_____

_____

3. A technician at a construction site in **Nairobi** is testing different wires.

(a) **Distinguish** between **Ductility** and **Brittleness** based on the graph. (2 marks)

_____

_____

_____

(b) **Define** Hooke's Law as applied to a spring in a weighing scale. (2 marks)

_____

_____

(c) **Identify** the property of a material that resists scratching or indentation. (1 mark)

_____

_____

4. Learners at **Kamukunji Senior School** are investigating why a glass bottle cracks when water inside it freezes.

(a) **Describe** the Anomalous Expansion of Water" between 0◦C and 4◦C. (2 marks)

_____

_____

_____

(b) **Name** the device shown below used to control temperature in an electric iron. (1 mark)

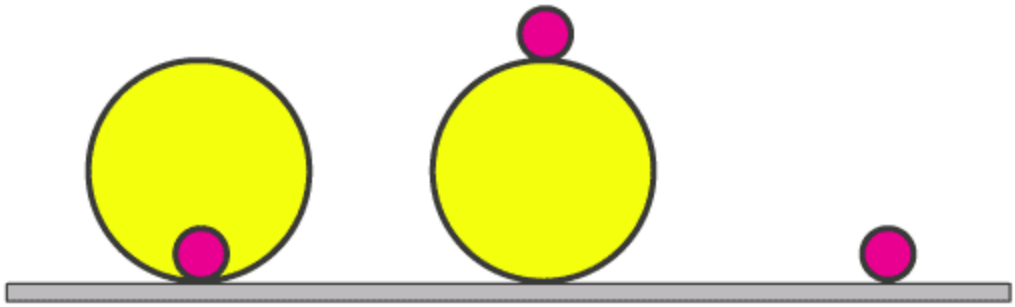


_____

(c) **List** two other technologies used to measure temperature besides liquid-in-glass thermometers. (2 marks)

i. _____
ii. _____

5. (a) **Identify** the state of equilibrium for the three cones shown below. (3 marks)



X Y Z

X: _____

Y: _____

Z: _____

(b) **Define** the "Center of Gravity" of an object. (2 marks)

_____

_____

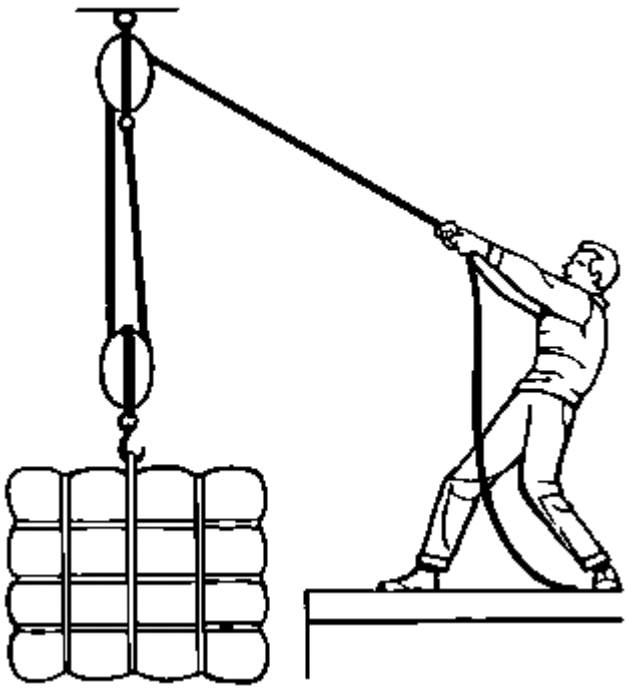
(c) Wirite whether the following statement is **True or False:**

For a body to be in equilibrium, the sum of clockwise moments must equal the sum of anticlockwise moments about the same point. [_____] (1 mark)

(d) **Calculate** the moment of the force in the scenario below. (4 marks)

SECTION B (50 MARKS)

6. A worker at the **Port of Mombasa** uses a pulley system to lift a crate.



(a) **Identify** the type of machine shown and **Name** the parts labeled **Effort** and **Load**. (3 marks)

(b) **Explain** why the efficiency of this machine can never be 100%. (3 marks)

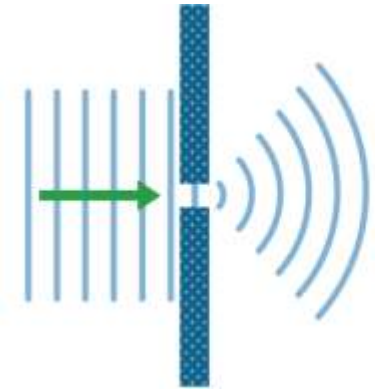
(c) **Distinguish** between **Potential Energy** and **Kinetic Energy** using a swinging pendulum as an example. (4 marks)

Potential energy	Kinetic energy

(d) **Calculate** the work done if a force of 200N moves an object 5m in the direction of the force. (3 marks)

(e) **Outline** one application of an inclined plane in a Kenyan hospital. (2 marks)

7. Grade 10 learners at **Kenya High School** are observing water waves in a ripple tank.



(a) **Name** the wave property illustrated in the image above. (2 marks)

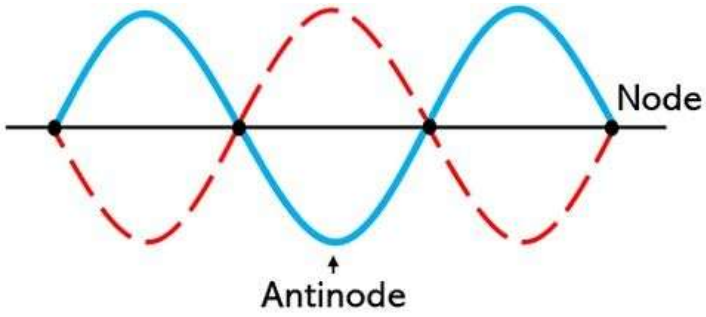
(b) **Explain** the "Doppler Effect" using the example of a police siren moving through **Nakuru** town. (4 marks)

_____

_____

_____

(c) **Identify** the type of wave shown below that is formed by the interference of two identical waves traveling in opposite directions. (2 marks)



_____

_____

_____

(d) **Describe** how **Resonance** can be dangerous to a bridge in **Thika**. (4 marks)

_____

_____

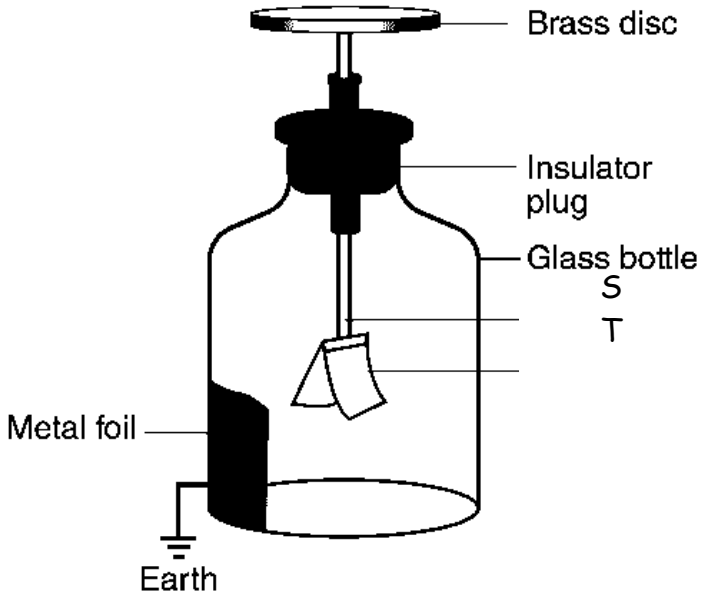
_____

(e) **Define** the term "Refraction" of waves. (3 marks)

_____

_____

8. Study the diagram of the Gold Leaf Electroscope used in a lab in **Eldoret**.



(a) **Name** the parts labeled: (2 marks)

S: _____

T: _____

(b) **Outline** the steps to charge this electroscope negatively by induction. (4 marks)

i. _____
ii. _____
iii. _____

(c) **Identify** the electric field pattern between two unlike charges. (2 marks)

_____
_____

(d) **State** one application of electrostatics in modern industry. (2 marks)

_____
_____
_____

9. (a) **Identify** the three types of radiation based on their penetration power. (3 marks)

i. _____
ii. _____
iii. _____

(b) **Define** "Half-life" of a radioactive isotope. (2 marks)

_____

_____

(c) **Explain** the "Big Bang Theory" regarding the origin of the universe. (3 marks)

_____

_____

_____

_____

_____

_____

(d) **List** two career opportunities available for students interested in Space Physics. (2 marks)

iv. _____

v. _____