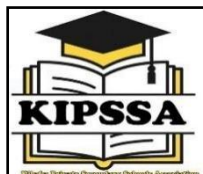


Student's assessment number:

THE PRIME MINISTER'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
KIBAHA PRIVATE SECONDARY SCHOOL ASSOCIATION (KIPSSA)



FORM TWO PRE-KIPSSA ASSESSMENT

031

PHYSICS

Time: 2½ Hours

Year: 2026

Instruction

1. This paper consists of sections **A**, **B** and **C** with a total of ten questions.
2. Answer **all** questions in the spaces provided.
3. All writing must be in blue or black ink except drawings, which must be in pencil.
4. All communication devices, calculators and any unauthorised materials are not allowed in the examination room.
5. Write your examination number at the top corner of every page.
6. Where necessary the following constants may be used
 - (i) Acceleration due to gravity, $g = 10 \text{ m/s}^2$ or 10 N/Kg .
 - (ii) Density of water = 1 g/cm^3 or 1000 kg/m^3
 - (iii) Density of mercury = 13.6 g/cm^3 or 13600 kg/m^3

QUESTION NUMBER	FOR EXMINER'S USE ONLY	
	SCORES	EXAMINER INITIALS
1		
2		
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10		
TOTAL		

SECTION A (15 MARKS)

Answer all questions in this section.

1. For each of the following items (i)-(x), choose the correct answer from the given alternatives and write in the space provided.
 - (i) The irregular motion of tiny particles suspended in a fluid is called 'Brownian motion'.
 - A. Mobility
 - B. Kinetic motion
 - C. Random motion
 - D. Brownian motion.
 - (ii) The area under a velocity-time graph represents
 - A. Acceleration
 - B. Force
 - C. Distance
 - D. Momentum
 - (iii) The property of the material to recover its original shape and size on removal of a stretching force is called
 - A. Elasticity
 - B. Plasticity
 - C. Hooke's law
 - D. Cohesively
 - (iv) The mass of 25 cm^3 of ivory was found to be 0.045 kg. The density of ivory in kg/m^3 is the following:
 - A. 1.8 kg/m^3
 - B. 180 kg/m^3
 - C. 18000 kg/m^3
 - D. 1800 kg/m^3
 - (v) A piece of wood is floating in water. In this case:
 - A. The upthrust of water is greater than the weight of the wood.
 - B. The upthrust of water is equal to the weight of the wood.
 - C. The density of water is equal to the density of the wood.
 - D. The density of water is less than the density of the wood.
 - (vi) How can water striders and pond skaters walk on water without sinking?
 - A. Because of the process of osmosis.
 - B. Because of the property of capillarity.
 - C. Because of the force of cohesion and adhesion.
 - D. Because of the force of surface tension.
 - (vii) Which set represents ferromagnetic materials below?
 - A. Aluminium, cobalt, and nickel.
 - B. Chromium, cobalt and steel.

C. Steel, nickel and aluminium.

D. Cobalt, nickel and steel.

(viii) The image formed by plane mirrors is always:

A. Laterally inverted

B. At infinity

C. In front of the mirror

D. Real

(ix) Which statement is true about a body whose work done is zero?

A. Its displacement is in the opposite direction to the force applied.

B. Its displacement is in the same direction as that of the applied force.

C. Its displacement is in a direction perpendicular to the applied force.

D. Its displacement is at an angle to the direction of the applied force.

(x) What is the SI unit of capacitance?

A. Coulomb B. Ampere C. Farad D. Volt

Answers:

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)

2. Match each item in List A with the correct response in List B by writing the letter in the table provided.

LIST A	LIST B
(i) Stretching (ii) Attraction (iii) Friction (iv) Viscosity (v) Tension	A. Effect of magnet on iron material B. Force on string C. Extension of rigid materials such as springs D. Two rough surfaces in contact E. Resistance to motion in a fluid. F. Force that opposes relative motion between surfaces. G. Force of pull acting along a stretched elastic material

Answers

(i)	(ii)	(iii)	(iv)	(v)

SECTION B (70 MARKS)

Answer all questions in this section.

3. (a) What is the difference between a micrometre screw gauge with 100 divisions on the thimble scale and one with 50 divisions?

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- (b) A micrometre screw gauge with a least count of 0.01 mm is used to measure the diameter of a rod. The sleeve reading is 1.6 cm, and the thimble reading is 48 divisions. Calculate the diameter of the rod.

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- (c) What are the limitations of using a micrometre screw gauge in measuring small lengths?"

- (i)
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(ii)
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(iii)
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4. (a) A science class observes that some objects float while others sink in water, even though they are made of the same material. Suggest and state the principle related to this observation.

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- (b). An object weighs 60N when in air and 40N when immersed in water.

Calculate:

- (i) The relative density of the object?

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(ii) The density of the object?

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5. (a). A business student asks why mirrors used in cars, motorcycles, and other vehicles are curved instead of flat. As an upcoming physicist:

(i) Identify the type of curved mirror used as a driving mirror.

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(ii) Explain why it is used.

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(b) A ray of light strikes a plane mirror such that the angle with the mirror is 20° . What is the value of the angle of reflection? What is the angle between the incident ray and the reflected ray?"

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6. (a) Differentiate between the following terms:

(i) Distance and displacement

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(ii) Speed and velocity

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- (b) A car starts from rest and accelerates uniformly at a rate of 4 m/s^2 for 5 seconds. It then moves at a constant velocity for 20 seconds. The brakes are applied, and the car comes to rest uniformly in 3 seconds.

(i) Draw the velocity-time graph for the motion.

(ii) Calculate the total distance travelled.

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7. (a) While walking back home, you hear two Form One students arguing that work, energy, and power have the same meaning. As a Form Two student:

Define each term.

(i) Power.....

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(ii) Work

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(iii) Energy

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- (b) A man of mass 90 kg runs up a flight of stairs that is 10 metres high in 4 seconds.

Calculate:

(i) The work done by the man.

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(ii) The power developed by the man.

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8. (a) (i) A ray of light strikes a plane mirror and reflects back into the same medium. State two laws of reflection of light that govern such a situation.

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(ii) Two plane mirrors are inclined at an angle of 60° to each other. Determine the number of images formed when an object is placed between them.

(b) An object 20 cm high is placed 40 cm in front of a concave mirror with a focal length of 15 cm.

Using the mirror formula, determine the position of the image, the nature of the image, the size of the image, and the magnification"

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9. (a) If a metal rod is given a negative charge and brought near another neutral metal rod, will there be an electric force between them? If there is a force, will it be attractive or repulsive? Why?

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- (b). Three capacitors with capacitances of $15\ \mu\text{F}$, $25\ \mu\text{F}$ and X are configured in a circuit such that the equivalent capacitance is $7\ \mu\text{F}$.

(i) Identify the type of arrangement of capacitors.

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(ii) Determine the capacitance of capacitor X .

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SECTION C (15 MARKS)

Answer this questions.

10. (a) While inserting an electric plug into a socket, a child did not notice a thin piece of aluminium foil stuck between the pins of the plug. When the switch was turned on, a spark appeared and the light went out. Explain what happened to:

(i) Cause the spark.

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(ii) Make the light go out.

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- (b) A bulb with a resistance of 5Ω is connected to an 8V battery. If the internal resistance is neglected,

(i) How much current will flow through the bulb?

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(ii) How much light and heat energy does the lamp produce in one hour?

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