

PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
JOINT INSPIRING EXAMINATIONS FOR PRIVATE SECONDARY SCHOOLS



(JIEPSS)

FORM TWO JOINT TERMINAL EXAMINATION

Code:031

PHYSICS

Time: 2: 30 Hours

May/june 2025

Instructions

1. This paper consists of section A, B and C with total number of ten (10) questions
2. Answer all questions in all sections
3. Write your answers in the spaces provided
4. All writings must be in blue or black ink except diagrams which must be in pencil.
5. Cellular phones and any unauthorized materials are not allowed in the assessment room.
6. Where necessary you may use the following constants.
 - (i) Acceleration due to gravity, $g = 10\text{N/kg}$ or 10m/s^2
 - (ii) Density of water = 1g/cm^3 or 1000kg/m^3

SECTION A (15 MARKS)

1. For each of the items (i) – (x) choose the correct answer among the given alternatives and write its letter in the table provided below
- (i) Using defective instrument in taking measurements may lead to
A. Parallax error B. Zero error C. Instrumental error D. Environmental error
 - (ii) For each of the following pairs of materials being rubbed together, identify the one that could become negatively charged
A. Glass and silk B. Comb and hair C. Fur and glass D. Fur and hard rubber
 - (iii) What is the resistance of a lamp operating on 120V line when it draws a current of 0.5A?
A. 240V B. 240Ω C. 24Ω D. 60 Ω
 - (iv) The meniscus of mercury in a glass vessel curves upward because:
A. The adhesion on mercury molecules to glass is greater than cohesion of its molecules.
B. The cohesion of mercury molecules is stronger than the adhesion force between molecules of glass and mercury.
C. Mercury has high capillary action on the glass vessel.
D. Mercury is denser than glass.
 - (v) The area under the velocity time graph represents:
A. Acceleration B. Distance covered C. Speed D. Velocity
 - (vi) The energy associated with areas of frequent earthquakes is known as:
A. Tidal energy B. Solar energy C. Geothermal energy D. Hydroelectric energy
 - (vii) A negatively charged rod is brought near the cap of negatively charged electroscope. The divergence of the electroscope will:
A. Decrease C. Decrease and then increase
B. Increase D. Increase and then decrease
 - (viii) Strong and permanent magnets are made up of:
A. Aluminium and Nickel C. Cobalt and Nickel
B. Iron and magnesium D. Nickel and silver
 - (ix) A man weighs 850N takes two minutes to run upstairs in so doing, he ascends vertically 8m high. Calculate his power in horsepower (take 1h.p = 745watts)
A. 0.076h.p B. 0.045h.p C. 0.037h.p D. 0.086h.p
 - (x) A lever which has its fulcrum between effort and load is said:
A. Third class B. Fourth class C. Second class D. First class

Answers

i	ii	iii	iv	v	vi	vii	viii	ix	x

2. Match each item in LIST A with a correct response in LIST B by writing its letter below the number of the corresponding item in the table provided.

LIST A	LIST B
(i) Ability of liquid to rise or fall in a narrow tube	A. Floating
(ii) Capacity of an object to float in a fluid	B. Buoyancy
(iii) Tendency of matter to be in a state of random motion	C. Cohesive
(iv) Attraction force between molecules of different substances	D. Plasticity
(v) Tendency of an object to fall or drop to lower level in a fluid	E. Brownian motion
	F. Capillarity
	G. Viscosity
	H. Adhesive
	I. Elasticity
	J. Sinking

Answers:

LISTA	(i)	(ii)	(iii)	(iv)	(v)
LISTB					

SECTION B (70 MARKS)

3. (a) (i) Physics helps us to answer questions like why a man experiences some changes in his weight while his mass remain constant when he try to move from one planet to another. As a physicist briefly this phenomenon

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- (ii) The weight of astronaut is 900N on the earth. On the moon he weighs 150N. Calculate the moons gravitational strength

- (b) A tin containing 5000 cm^3 of paint has a mass of 7.0 kg

- (i) If the mass of the empty tin, including the lid is 0.5 kg calculate the density of the paint

- (ii) If the tin is made of a metal which has a density of 7800 kg/m^3 . Calculate the volume of metal used to make the tin and the lid.

4. (a)(i) The day before yesterday Masanja and his friend were riding a bike in their street; unfortunately, Masanja hit a chicken and a chicken died instantly, today when he came to school, he went through the place where the chicken was hit and he smelt a very bad smell. Briefly explain the phenomenon governing this observation

- (ii) The ball rebounds to the height less than the original height. Explain briefly why does this happen.

- (b) (i) State the principle of conservation of energy

- (ii) A pendulum bob of mass 50g is pulled a side to a vertical height of 20cm from the horizontal and then released. Calculate the maximum speed of the bob.

5. (a)(i) Explain what will happen if you cut a bar magnet into half

- (ii) Magnets and magnetic materials are two interchangeable materials. Describe how a magnet can be turned to magnetic material? Three (3) points

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- (b) Explain why petrol road tankers usually have length of metal chain hanging down touching the ground?

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- (c) A capacitor is labeled with capacitance value of $470\mu F$ and is charged to the potential difference of 10V. Calculate the charge stored by the capacitor

6. (a) How are the mechanical advantage, velocity ratio and efficiency of a machine related?

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- (b) Briefly explain how Lubricants reduce friction between two moving parts

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- (c) A pulley system has three wheels on the lower block and three wheels on the upper block. The system is used to raise a load of 60kg
- (i) Draw the diagram for this machine

- (ii) If the efficiency of the system is 90%. Determine the effort applied in raising the 60kg load.

7. (a) Suppose an object is not moving, can you conclude that there are no forces acting on it? Explain your answer.

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- (b)(i) Why does a loaded test tube float upright in water?

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- (ii) A uniform pencil AB weighing 20g can be balanced horizontally on a knife edge at 4cm from the end A when the mass of 80g is hung from this end. What is the length of the pencil?

8. (a) Describe the effect of the following on the image produced by a pin hole camera

- (i) Making the pinhole very small

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- (ii) Object brought closer to the pin hole

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- (b) Determine the number of images formed when an object is placed between two plane mirrors,

(i) perpendicular to each other	(ii) parallel to each other

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- (c) Light is a form of energy. As a form two student how can you distinguish light from other forms of energy? (Give two points)

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9. (a) Briefly explain why;

- (i) When the metal can that containing hot water is closed and the cold water is poured on it, the can collapses?

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- (ii) Dams are constructed thicker at the bottom than at the top?

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- (iii) Water is not used as a barometric liquid?

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- (b) A car of weight 8000N has four wheels. The area of each wheel in contact with the ground is 2400cm^2 . Calculate the pressure of the car on the ground

SECTION C (15 MARKS)

10. (a) Suppose you are asked by your teacher to prepare electrical components and instruments for an experiment to determine the relationship between voltage and current;

- (i) Give five electrical components that can be used in this experiment

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- (ii) Draw a simple electric circuit which will be suitable for that experiment

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- (iii) State four (4) reasons that might affects the flow of current in the circuit

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- (iv) State the law governing the experiment

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- (v) A current of 100mA flows through a $5k\Omega$ resistor. Determine the potential difference across the resistor