GREENLAWNS HIGH SCHOOL
PHYSICS TERMINAL EXAMINATION 2025-26

STD.10 **MARKS: 80**
DATE: 25/09/2025 **TIME: 2 HR.**

NOTE:

1] Answer to this paper must be written on the paper provided separately.
2] You will not be allowed to write during the first 10 minutes. This time is to be spent in reading the question paper.
3] The time given at the head of this paper is the time allowed for writing the answers. This paper has 4 pages (7 sides).
4] Section A is compulsory. Attempt any 4 questions from Section B.
5] The intended marks for a question or parts of questions are given in the brackets [ ].

SECTION A [40 MARKS]

ALL QUESTIONS IN THIS SECTION ARE COMPULSORY.

QUESTION 1

Choose the most correct answers to the questions from the given options: **[15]**

i) In an equiangular prism at minimum angle of deviation, the angle of emergence is

a) greater than the angle of incidence b) lesser than the angle of incidence
c) equal to the angle of incidence d) zero

ii) The heart of a normal person beats 72 times in a minute and does a work of 1J per beat. What is the power of the heart?

a) 1.5 W b) 1.2 W c) 2.2 W d) 1.7 W

iii) With respect to the following table which substance will have the highest critical angle?

Substance	Refractive index
Water	1.33
Glass	1.5
Turpentine	1.47
Diamond	2.41

a) Water b) Glass c) Turpentine d) Diamond

Contd…….

iv) When sound waves travelling in air enter into the medium of water, the quantity which remains unchanged is

a) Wavelength b) Velocity c) Frequency d) Amplitude

v) A moment of couple has a tendency to rotate the body in clockwise direction. The moment of couple is taken as:

a) Positive b) Negative c) Maximum d) Zero

vi) The kinetic energy of a given body depends on the

a) position b) centre of gravity c) momentum d) displacement

vii) When objects are viewed through the rising heat of a campfire, they appear to shimmer. The optical phenomenon responsible for this is

a) Scattering b) Refraction

c) Dispersion d) Total internal reflection

viii) The energy conversion, when an oscillating pendulum moves from mean to extreme position is

a) Kinetic to Potential b) Potential to Kinetic

c) Potential to Kinetic to Potential d) Kinetic to Potential to Kinetic

ix) When a heavy load is lifted by applying a less effort, the machine acts as a

a) Force multiplier b) Power multiplier

c) Speed multiplier d) direction changer

x) **Assertion(A)**: Soldiers avoid firing at a target in foggy weather conditions.
Reason(R): In foggy weather, light gets scattered by tiny water droplets, reducing the visibility.

a) (A) is true but (R) is false. b) (A) is false but (R) is true.

c) Both (A) and (R) are true and (R) is the correct explanation of (A).

d) Both (A) and (R) are true and (R) is not the correct explanation of (A).

xi) A ray of light incident at an angle of incidence 48 on a prism of refracting angle 60 suffers a minimum deviation. The angle of minimum deviation is

a) 0 b) 36 c) 48 d) 60

Contd…….

xii) Nisha used a single movable pulley to lift a bucket of water from a well. She lubricates the pulley.
Which of the following statements is true regarding the performance of the pulley used?
a) Mechanical advantage decreases and efficiency increases.
b) Velocity ratio increases and efficiency decreases.
c) Mechanical advantage remains unchanged and efficiency increases.
d) Velocity ratio remains unchanged and efficiency increases.

xiii) Centrifugal force is
a) a real force b) the force of reaction of centripetal force
c) a fictious force d) directed towards the centre of circular path

xiv) A convex lens with a focal length of 12cm has an object at a distance of 20cm in front of the lens. A blurred image is obtained on the screen placed at a distance of 23cm behind the lens. In order to obtain a clear image, the screen has to be moved
a) towards the lens b) away from the lens
c) to a position very far from the lens d) either towards or away from the lens

xv) The highest refractive index is of
a) Glass b) Diamond c) Water d) Air

QUESTION 2

A] How is mechanical advantage related to velocity ratio in **[2]**
i) an ideal machine ii) an actual machine

B] Name the device which converts the following: **[2]**
i) Nuclear energy to Electrical energy
ii) Electrical energy to Sound energy

C] Draw a neat labelled diagram of a single pulley whose mechanical advantage is 1. **[2]**

D] State two properties of ultraviolet radiations which differ from visible light radiation. **[2]**

E] Give two conditions for an echo to be heard. **[2]**

F] Define linear magnification produced by a lens. State its SI unit. **[2]**

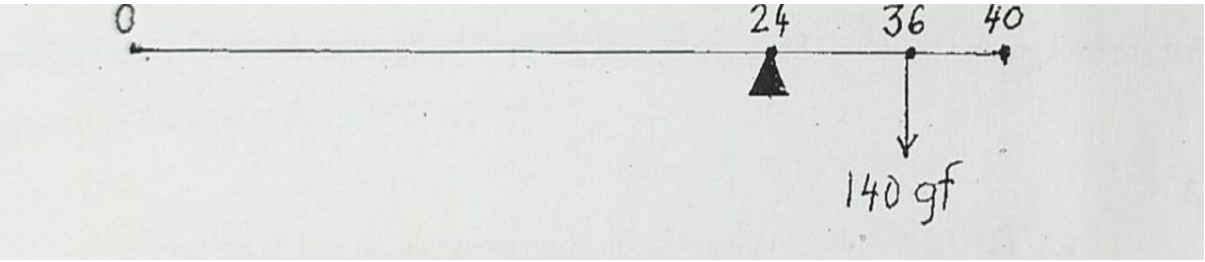
Contd…….

G] Which characteristic property/phenomenon is responsible for the following: **[3]**

i) The sky appears blue ii) Sparkling of a diamond iii) A tree near the pool appears to be taller than normal to a swimmer swimming in the pool.

QUESTION 3

A] The diagram given below shows a uniform ruler of length 40cm pivoted at 24cm mark. The ruler is balanced horizontally when a weight of 140 gf is hung at 36cm mark. Calculate the weight of the ruler. **[2]**



B] Complete the following by choosing the correct answer from the brackets: **[2]**

i) A boy uses a GPS device to locate his missing friend in a crowded area. The system primarily uses _____ (ultraviolet rays/microwaves) to track the location.

ii) Lifting body weight on toes is an example of _____ (Class II/Class III) lever.

C] Give two properties of ultrasound which make them suitable for variety of uses involving echo. **[2]**

D] A light mass (m) body 'X' and a heavy mass (M) body 'Y' have equal momentum. Which body will have more kinetic energy? Show the steps of working. **[2]**

E] i) When the body is said to be in equilibrium? **[2]**

ii) If a large force is acting on an object such that its line of action passes through the point about which the object can rotate. What will be your inference about the appropriate magnitude of moment of force?

Contd……..

SECTION B (40 MARKS)

ATTEMPT ANY 4 COMPLETE QUESTIONS FROM THIS SECTION.

QUESTION 4

A] i) Define absolute refractive index. **[3]**

ii)The speed of light in glycerine is 2.05×10^5 kms^{-1}. Calculate its absolute refractive index?

B] Where the chance of overturning is more- in a ship loaded with lighter goods or a ship loaded with heavier goods? Justify your answer. **[3]**

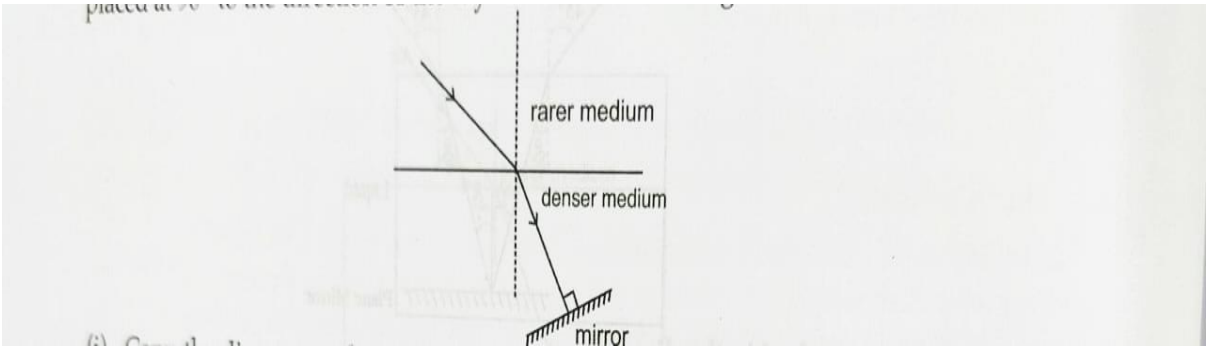
C] i) Both concave and convex lens can form a virtual image. What is the difference between these virtual images? **[4]**

ii) Draw a ray diagram to show the virtual image formed by a concave lens.

ii) Give one use of a concave lens.

QUESTION 5

A] A ray of light is moving from a transparent rarer medium to a transparent denser medium and then strikes a plane mirror at 90^o in the direction of the ray as shown in the diagram. **[3]**



i) Copy the diagram and mark arrows to show the path of ray after striking to the mirror.

ii) Name the principle you have used to mark the arrows to show the direction of the ray.

iii) Also show the phenomenon of light possible when the incident ray strikes the boundary of two media in the same figure.

B] A boy standing in front of a wall at a distance of 85m produces 2 claps per second. He notices that the sound of his clapping coincides with the echo. The echo is heard only once when clapping is stopped. Calculate the speed of sound. **[3]**

Contd…..

C] i) Define: Machine. **[4]**

ii)State how are the following machines used - As a force multiplier, a speed gainer or to change the direction of application of effort?

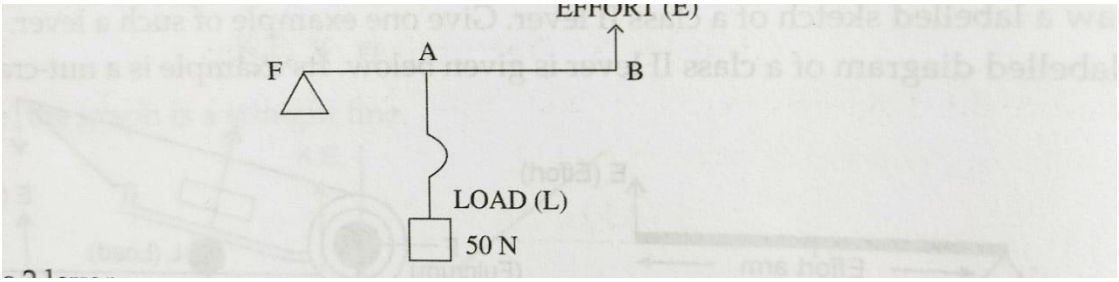
a) Wheel barrow b) Foot treadle c) Physical balance with equal arms.

QUESTION 6

A] The diagram below shows a lever in use. **[3]**

i) To which class of lever does it belong?

ii) If FA = 40cm, AB = 60cm, then find the mechanical advantage of the lever.



B] i) Define Power. **[3]**

ii) Derive the relationship between the velocity, Power and the force.

C] The electromagnetic radiations have the wavelength in the range 800nm to 1mm. **[4]**

i) Identify the radiations. ii) Give its 2 properties and one use.

QUESTION 7

A] i) Define centre of gravity of an object. **[3]**

ii) Where does the centre of gravity lie in the following cases?

a) cylindrical drum b) rectangular paper

B] An object is placed at a distance of 12 cm from a convex lens of focal length 8 cm. Find: **[3]**

i) the position of the image ii) magnification of the image

C] Name the following: **[4]**

i) The part of spectrum beyond the red extreme and the violet extreme.

ii) The potential energy possessed by a body in the deformed state.

iii) The point on the principal axis of the lens such that a ray of light directed towards this point emerges parallel to its direction of incidence.

iv) The prolonged sound formed after repeated reflections at the reflecting surface.

Contd…..

QUESTION 8

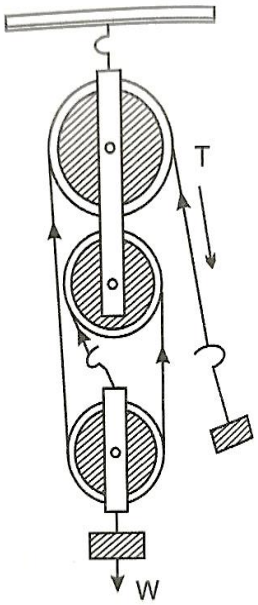
A] Draw a neat labelled ray diagram using a suitable lens which finds its application in the terrestrial telescope. **[3]**

B] i) Define: Torque. **[3]**

ii) State two factors which affect the torque.

C] The pulley system in the figure is to be used to lift a load 'W'. If the man applying the effort cannot apply a force exceeding 1000N, what is the maximum load that can be lifted? **[4]**

The actual load that the man is finally able to lift turns out to be 2700N. What are the values of mechanical advantage and the efficiency for the actual setup?



QUESTION 9

A] i) Name the unit of physical quantity obtained by the formula $2K/ v^2$ **[3]**
where K= kinetic energy and v = linear velocity

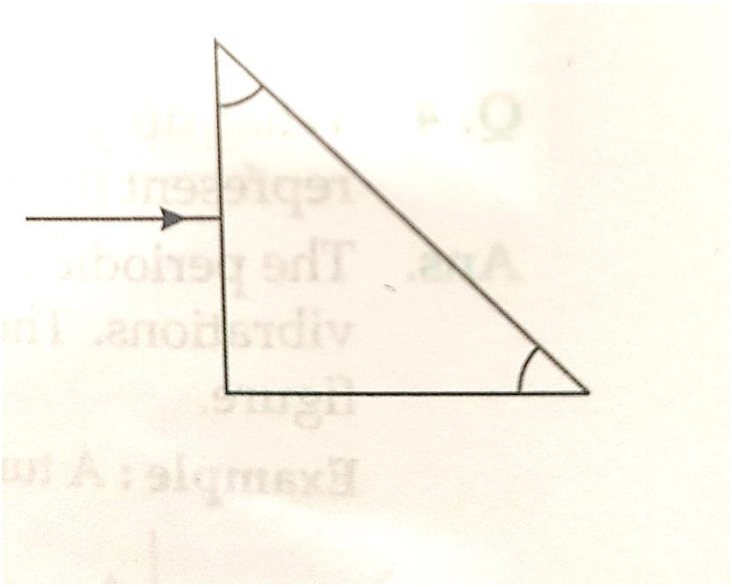
ii) What is the ratio of velocities of light of wavelength 4000A and 8000 A in vacuum?

iii) Which of the above wavelength 4000 A or 8000A has a higher frequency?

Contd……

B] In the diagram, a narrow beam of white light is incident on a right-angled isosceles prism. The critical angle of the material of prism for yellow colour of white light is 45^{o} . Complete the diagram to show the path of blue, yellow and red colours of white light till they emerge out of the prism. **[3]**

Narrow beam of White light (Red+Blue+Yellow)



C] Write the 3 characteristics each of the image formed by a convex lens of focal length 20cm for the object at distance **[4]**

i) 10cm ii) 30cm iii) 40cm iv) 60cm from the lens.