GREENLAWNS HIGH SCHOOL
PHYSICS TERMINAL EXAMINATION 2025-26

STD.9 **MARKS: 80**
DATE: 19/09/2025 **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 3 pages (6 sides).
4] Section A is compulsory. Attempt any 4 complete questions from Section B.
5] The intended marks for a question or parts of questions are given in the brackets [ ].
6] Show the necessary steps in numericals. Take g value 9.8 ms^{-2} .

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) The least count of a vernier callipers is
a) 0.1mm b) 10 mm c) 1mm d) 0.01mm

ii) For uniform retardation, the acceleration -time graph is
a) a straight line inclined to time axis passing through origin
b) a straight line parallel to time axis below it.
c) a straight line overlapping the time axis.
d) a straight line parallel to time axis above it.

iii) Which of the following is a contact force?
a) Gravitational force b) Electrostatic force
c) Restoring force d) Magnetic force

iv) Select the correct equation of motion for a body moving with a velocity 'v' vertically up covering height 'h' in time 't' with an initial velocity 'u'. (g = acceleration due to gravity)
a) $v = u + gt$ b) $h = ut + gt^2$ c) $v^2 = u^2 + ½ gh$ d) $v^2 = u^2 - 2gh$

v) The SI unit of pressure is
a) Pa b) Nm^2 c) Nm^{-2} d) both a and c

Contd…..

vi) A, B, C, D are the four liquids with the same volume in descending order of their densities. If an object is immersed to the same depth in each liquid then in which liquid it would experience the minimum upthrust?

a) Liquid A b) Liquid B c) Liquid C d) Liquid D

vii) Which among the following is not a leap year?

a) 2024 A.D. b) 1996 A.D. c) 1900 A.D. d) 2004 A.D.

viii) A vector quantity is

a) Mass b) Pressure c) Upthrust d) Relative density

ix) A body of weight 'W' is floating in a liquid with its apparent weight

a) equal to W b) zero c) less than W d) greater than W

x) Newton's second law is based on

a) inertia b) momentum c) action-reaction forces d) gravitational force

xi) The force which is insignificant between ordinary bodies is

a) Gravitational force b) Frictional force

c) Tension force d) Electrostatic force

xii) Assertion (A)- The slope of displacement-time graph gives speed.

Reason (R)- Speed is the product of displacement and time.

a) Both A and R are false b) A is true but R is false

c) A is false but R is true d) Both A and R is true

xiii) When a pendulum clock is taken to mountains its time period

a) increases b) decreases c) remains the same d) sometimes increases and sometimes decreases depending on weather

xiv) The upthrust acting on a body submerged in a fluid does not depend on

a) volume of solid immersed b) acceleration due to gravity

c) density of the liquid d) temperature of the liquid

xv) The following is an example of one-dimensional motion

a) A body moving on a plane along a curved path

b) a stone falling down vertically

c) a body moving in a space d) a body moving laterally

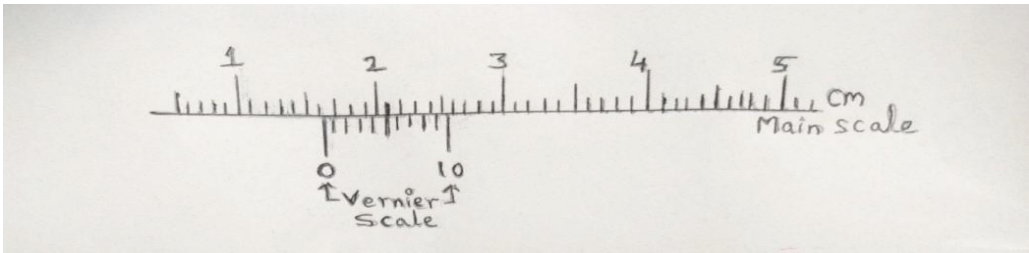
Q. 2] A] Identify the action and reaction forces in each of the following cases.

i) A boy sitting on a chair. ii) Hammer hitting a nail. [2]

B] Write down the average value of an acceleration due to gravity (g) on the earth's surface. How is it related to the universal constant (G)? **[2]**

Contd….

C]The diagram given below shows the part of a vernier scale measuring the thickness of an object. Using the scale shown in the diagram calculate the thickness of the object considering there is no zero error. **[2]**



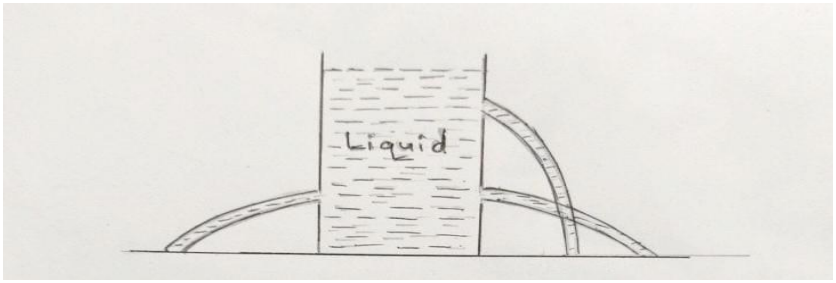
D] State whether the upthrust would increase or decrease when:
i) the volume of a solid increase ii) acceleration due to gravity **[2]**

E] An object is weighed using a spring balance in air and in vacuum. Where its weight will be more? Why? **[2]**

F] i) **Write** the nature of the acceleration-time graph if the velocity of the body changes in an irregular manner. **[2]**
ii) Explain the meaning of 1kgf = 9.8 N

G] A seconds' pendulum is taken to a place where acceleration due to gravity falls to one-ninth. Does the time period of a pendulum increase, decrease or remain the same? Give reason. Calculate its new time period. **[3]**

Q.3] A] Observe the figure given below and state the two laws of liquid pressure represented in the figure. **[2]**



B] i) What is the relationship between the force applied on a body and rate of change of momentum? **[2]**
ii) Is momentum a scalar or a vector quantity?

C] Relative density of aluminium is 2.7. Find its density in SI and cgs units. **[2]**

D]Explain: It is easier for a man to swim in the sea water than in river water. **[2]**

E] Fill in the blanks. **[2]**
i) The value of the gravitational constant is _____.
ii) For a body moving with a _____ velocity, the velocity of the body at any instant is called its instantaneous velocity.

SECTION B (40 MARKS)
ATTEMPT ANY 4 COMPLETE QUESTIONS FROM THIS SECTION

QUESTION 4

A] Aarush measured the length of a rod by a ruler, vernier callipers and screw gauge to be 1.2 cm, 1.26 cm and 1.264 cm respectively. Write the least count of each instrument used by him. **[3]**

B] Derive an equation for the distance 'S' covered in time 't' by a body moving with an initial velocity 'u', final velocity 'v' and having an acceleration 'a'. **[3]**

C] A car travels a distance 100m with a constant acceleration and average velocity of $20ms^{-1}$. The final velocity acquired by the car is 25 ms^{-1}. **[4]**
Find i) the initial velocity and ii) acceleration of the car.

QUESTION 5

A] Name two bigger and one smaller non-metric units of length. **[3]**

B] Which Newton's law is applicable in each of the following cases: **[3]**
i) An athlete often runs before taking a long jump.
ii) Motion of a man on the ground.
iii) The motion of a freely falling body

C] Distinguish between the following pairs on the basis of the points given in the brackets: **[4]**
i) Speed and Velocity (Vector/ Scalar)
ii) Distance and Displacement (Comparison of their magnitudes)
iii) Thrust and Upthrust (meaning)
iv) Barometer and Altimeter (one use)

QUESTION 6

A] State the principle of hydraulic machines. Give two examples of the machines which work on the principle mentioned by you. (Do not explain) **[3]**

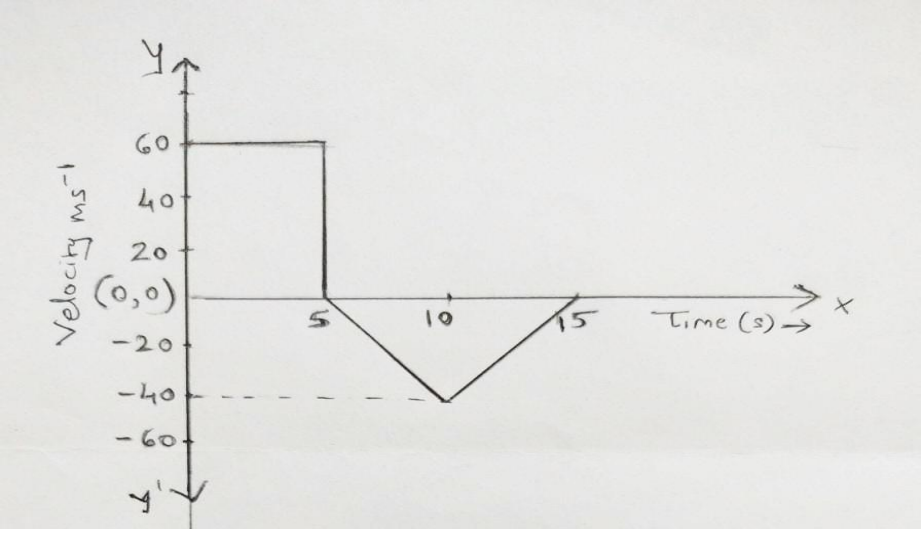
B] Explain: A goalkeeper in a game of football pulls his hands backwards while holding the ball shot at the goal. Also state the law which you have considered while explaining the statement. **[3]**

Contd…..

C] A solid weighs 80 gf in air and 55 gf when completely immersed in water. Calculate: i) the upthrust ii) the volume of the solid iii) the relative density of the solid. **[4]**

QUESTION 7

A] The velocity-time graph given below shows a body moving in a straight line. Calculate the displacement of the body in 15s. **[3]**



B] If given a choice between a simple barometer and Fortin's barometer which one you will select to measure the atmospheric pressure? Why? (Give 2 points in support your answer.) **[3]**

C] Fill in the blanks. **[4]**

i) 0.53 mm = _____ µm

ii) 105 kg = _____ metric tonne

iii) 56 ns = _____ min

iv) 25m = _____ Gm

QUESTION 8

A] A screw gauge has 50 divisions on its circular scale and its screw moves by 1mm on turning it by two rotations. When the flat end of the screw is in contact with the stud, the zero of the circular scale lies above the base line and 47^{th} division of the circular scale coincides with the base line. Find: i) the pitch ii) the least count iii) the zero error of the screw gauge. **[3]**

Contd…….

B] i) State Archimedes' principle. **[3]**

ii) Using Archimedes' principle explain the following:

An iron nail and a piece of cork, both having same volume immersed in a beaker containing water then the nail sinks and the cork floats with some part of it inside the water.

C] Define: **[4]**

i) Relative density ii) Inertia iii) Weight iv) Derived units

QUESTION 9

A] A body with an initial velocity of 18 kmh^{-1} accelerates uniformly at the rate of 37.5 cms^{-2} over a distance of 100m. Calculate its final velocity. **[3]**

B] Nisha has observed the following changes in the height of mercury column of the barometer in the school laboratory on various days. She couldn't forecast the weather using her observations. Help her in the same so that next time she would do the forecasting of weather in a better manner. **[3]**

Nisha's observations:

i) There was a sudden drop in barometric height.

ii) There was a gradual drop in barometric height.

iii) There was a gradual increase in barometric height.

C] Draw a displacement-time graph using the information given in the table. Using the graph drawn by you answer the questions given below the table. [4]

Displacement (m)	-20	-10	0	10	10	-20
Time (s)	0	1	2	3	4	5

Using graphical method find the velocity of the body between the time interval 2s to 3s.