GREENLAWNS HIGH SCHOOL
PHYSICS TERMINAL EXAMINATION 2024-25

STD. 9 **TIME: 2 HR.**
DATE: 26/09/2024 **MARKS: 80**

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 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 QUESTIONSS IN THIS SECTION ARE COMPULSORY.

QUESTION 1
Choose the most correct answers to the questions from the given options:[15]

i) The multiple unit of length in metric system is
a) micron b) Angstrom c) light year d) kilometre

ii) The SI unit of relative density is
a) kg/m^3 b) g/cm^3 c) m^3/kg d) no unit

iii) The least count of a thermometer having 10 divisions in every 5^0C scale is
a) 2^0C b) 1^0C c) 0.5^0C d) 5^0C

iv) A body of weight 5.5 N is floating in a liquid. Its apparent weight will be
a) less than 5.5 N b) zero c) grater than 5.5 N d) equal to 5.5 N

v) The property of inertia is more in
a) a football b) a toy car c) a road roller d) a bicycle

vi) The time taken by a seconds' pendulum in moving from one extreme to the other extreme is
a) 1 s b) 2 s c) 1 min d) 12 h

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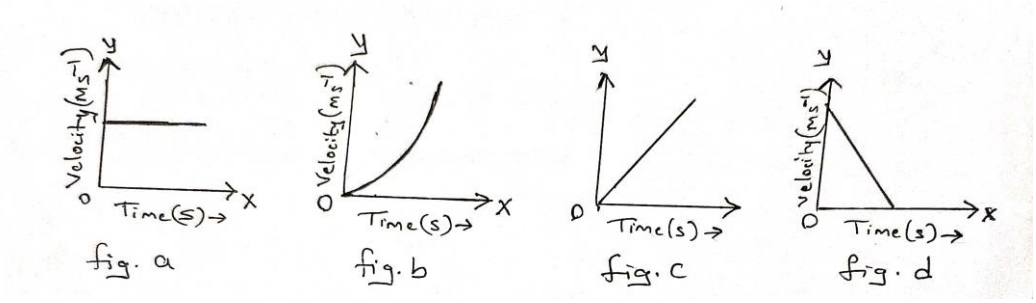
vii) Which of the following graphs shown below represents the velocity-time graph for a freely falling body under gravity?



a) fig. a b) fig. b c) fig. c d) fig. d

viii) An example of a non-contact force is
a) A simple pendulum at mean position
b) Lifting of iron scrap from the garbage using a crane
c) A spring balance used to measure the weight of a stone.
d) Clouds colliding with each other during a thunder storm.

ix) Archimedes' principle applies on
a) solids and liquids b) liquids and gases
c) solids and gases d) solids, liquids and gases

x) Action and reaction force act on the
a) same body in the same direction
b) different bodies in the same direction
c) same body in opposite direction
d) different bodies in opposite direction

xi) The mass of a body
a) changes with change of place b) changes with direction
c) changes when the velocity of the body is close to the velocity of light
d) changes with temperature

xii) The thrust exerted by a body placed on a surface is
a) less than the weight of the body b) equal to the weight of the body
c) greater than the weight of the body d) independent of the weight of the body

xiii) The normal atmospheric pressure is
a) 76 m of Hg b) 0.76 cm of Hg c) 760 mm of Hg d) 76 Pa

Contd,,,,,,,

xiv) Which of the following is the correct ascending order of accuracy?
a) Vernier callipers, metre rule, screw gauge
b) Metre rule, vernier callipers, screw gauge
c) Screw gauge, vernier callipers, metre rule
d) Metre rule, screw gauge, vernier callipers

xv) Hydraulic machines act like
a) Force multiplier b) Force reducer c) torque reducer d) both a & c

QUESTION 2

A] What do the following indicate in a barometer regarding weather? **[2]**
i) gradual fall in the mercury level ii) sudden rise in the barometric height

B] i) Write the equation of motion to calculate the final velocity when the acceleration, displacement and initial velocity are given. **[2]**
ii) Modify the equation written by you in Q.2 B- i for a body freely falling from height h under gravity.

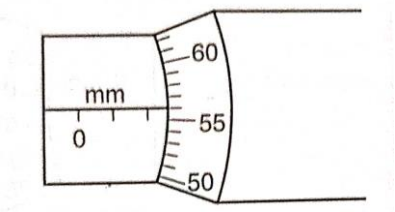
C] Two simple pendulums A & B have equal lengths but their bobs weigh 15 gf and 30 gf respectively. What will be the ratio of their time periods? Justify your answer. **[2]**

D] A body of mass 375 g is moving with a velocity 3.5 ms^{-1}. Calculate its linear momentum. **[2]**

E] The SI unit of acceleration due to gravity can also be written as N kg^{-1}. Is this statement true or false? Justify you answer. **[2]**

F] State Newton's 2nd law of motion. Name the physical quantity on which it is based on. **[2]**

G] Observe the figure given and answer the questions that follow: **[3]**



Write i) the main scale reading of the screw gauge.
ii) the circular scale reading of the screw gauge.
iii) the true (final) reading of the screw gauge if it is free from the zero error.

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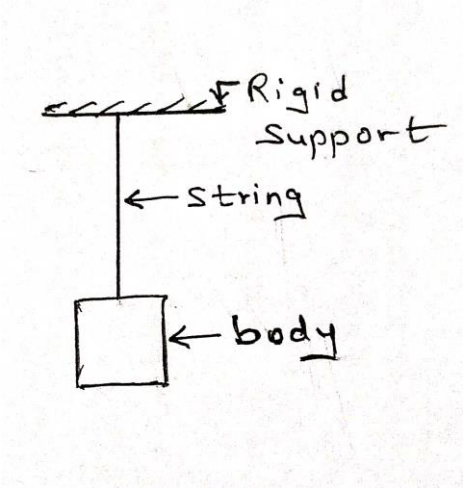
QUESTION 3

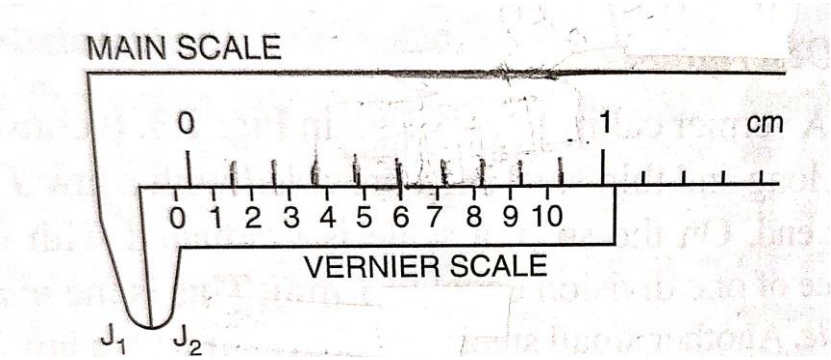
A] A body weighs 165 gf in air and 158 gf when completely immersed in water. Calculate the upthrust on the body. **[2]**

B] Observe the figure given below and name the force/s which are responsible for the equilibrium position of the body. **[2]**



C] A body is moving in a circular path with the speed of 10 ms^{-1}. Does the body have uniform velocity or a variable velocity? Why do you say so? **[2]**

D] The figure given below indicates the zero error in a vernier callipers. Observe it carefully and i) Write the type of the zero error ii) Calculate the zero error shown in the figure **[2]**



E] Fill in the blanks. **[2]**

1atm = _____torr

1 torr = _____mm of Hg

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SECTION B (40 MARKS)

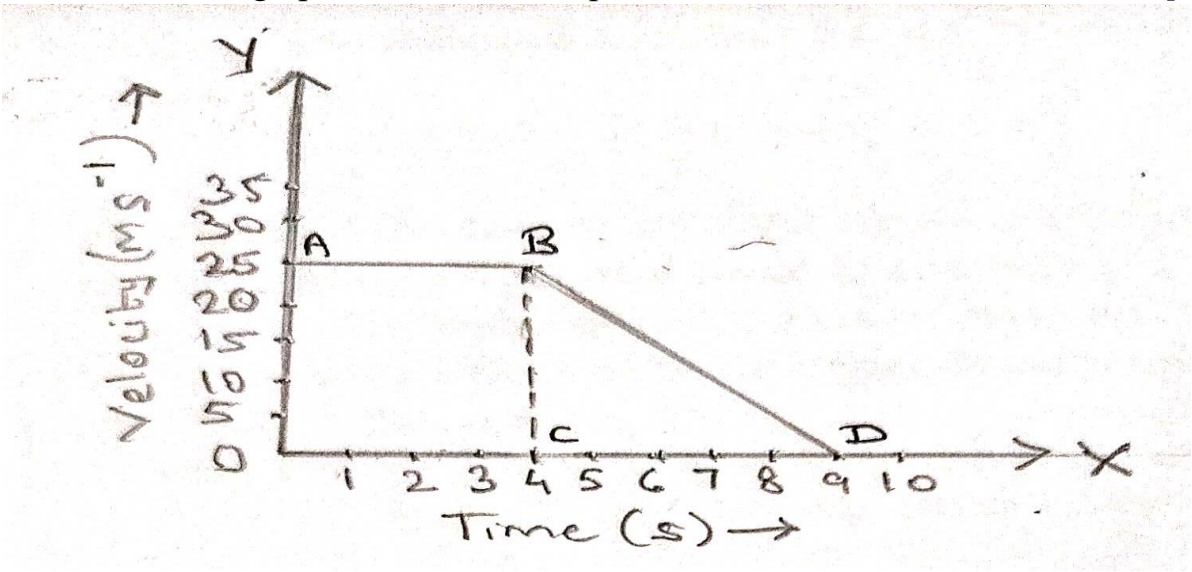
ATTEMPT ANY 4 COMPLETE QUESTIONS FROM THIS SECTION

QUESTION 4

A] Which liquid is preferred in the barometer? Why? (Give 2 points.) **[3]**

B] What do you mean by the time period and frequency of a simple pendulum? Give the relation between two. **[3]**

C] The velocity-time graph shows a car moving with a uniform velocity of 25 ms^{-1} for first 4 s. The brakes are then applied and it comes to rest in further 9 s. Observe the graph and answer the questions that follow: **[4]**

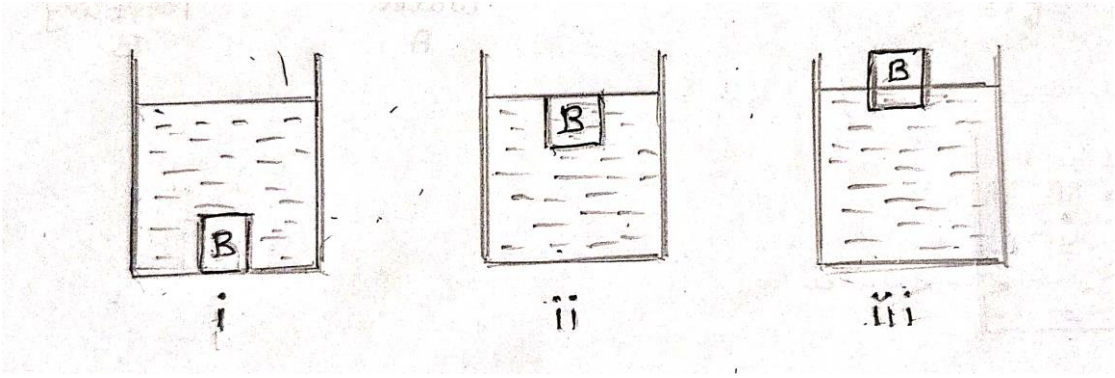


Calculate i) the distance travelled by the car in first 4s

ii) acceleration produced in last 5s.

QUESTION 5

A] Observe the figures given below and compare the weight (W) of the body with the buoyant force (F_B) in each case. Do not copy the figures. Represent the comparison in symbolic form only. **[3]**



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B] At what temperature the density of water is maximum? State its value. **[3]**
How does the density get affected when the temperature of water is increased?

C] Distinguish between the following pairs on the basis of what is given in the brackets **[4]**

i) Distance – Displacement (Compare the magnitudes)
ii) Mass – Weight (Instrument used for measurement)
iii) Thrust – Pressure (Scalar/ Vector)
iv) Acceleration – Retardation (changes in the velocity)

QUESTION 6

A] i) State Pascal's law. **[3]**
ii) A U tube is first partially filled with mercury. Then water is added in one arm and an oil is added in the other arm. Find the ratio of water and oil columns so that mercury level is same in both the arms of U tube.
(density of water =1000 kgm^{-3}, density of oil = 900 kgm^{-3})

B] Find the errors in the following statements if any and rewrite the correct statements. **[3]**

i) The SI unit of power is J/s^{-1}.
ii) The SI unit of work is Joule.
iii) The energy spent by the machine in doing a work is 150Js.

C] Draw a displacement-time graph using the given information: **[4]**

Displacement (m)	0	15	30	45	60
Time (s)	0	5	10	15	20

Calculate the velocity of the body by graphical method.

QUESTION 7

A] Define:
i) Buoyant force ii) Vector quantities iii) Least count of an instrument. **[3]**

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

C] Name the law/principle involved in each of the following cases: **[4]**

i) A stone immersed completely in water experiences an upthrust equal to the weight of the liquid displaced by it.
ii) It is easier for a person to float in sea water than in river water.
iii) On giving jerks to the branch of a tree, the flowers fall down.
iv) A satellite moves around the planet.

Contd……

QUESTION 8

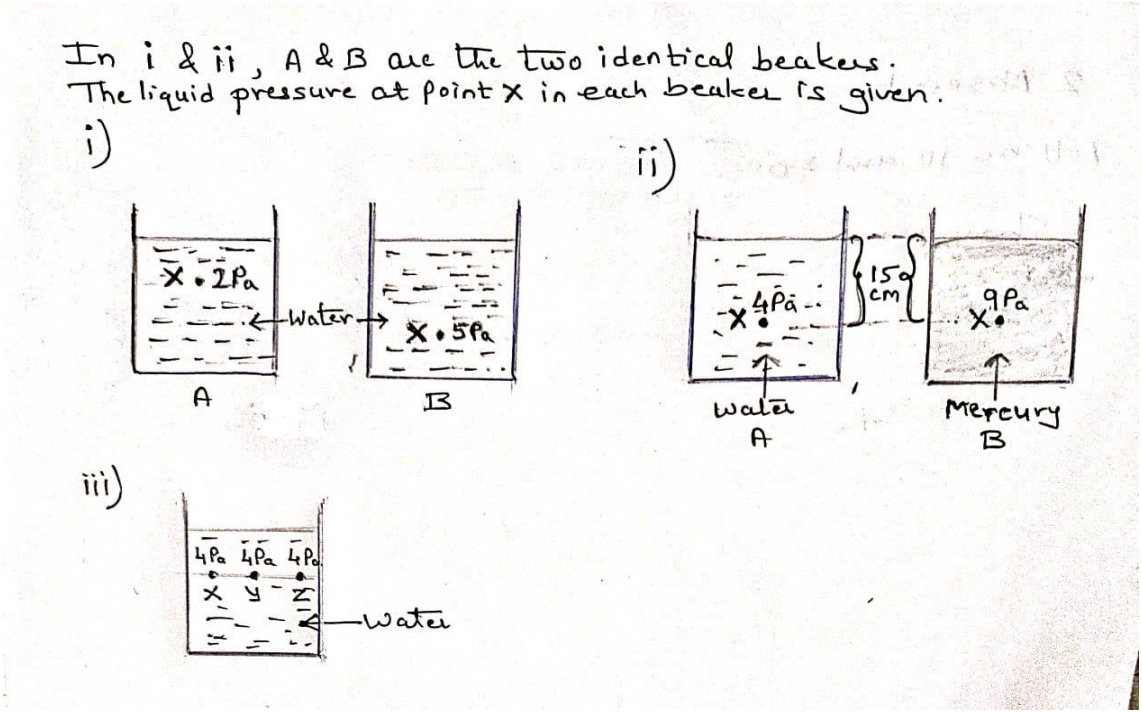
A] Nisha walked 5m due east and then 12m due north. Calculate: **[3]**
i) the total distance travelled by her ii) the displacement.

B] Which barometer will you prefer for measuring the atmospheric pressure - Fortin's barometer or Aneroid barometer? Why? (Give two points.) **[3]**

C] Explain: **[4]**
i) A person pushing a wall hard is liable to fall back.
ii) When a passenger jumps out of a moving train on the platform tends to fall down.
iii) A displacement-time graph can not be parallel to Y-axis.
iv) The size of the gas bubble formed at the bottom of a fish tank grows in size as it rises near the surface of the water.

QUESTION 9

A] Observe the figures given below and write the law of liquid pressure in each of the following cases: **[3]**



B] Fill in the blanks. **[3]**
i) 2.5 s = _____ns
ii) 750 mg = _____ quintal
iii) 35 mm = _____km

C] A solid body weighs 1.5 N in air. Its relative density is 7.86. How much the body will weigh if placed i) in water ii) in a liquid of relative density 1.26? **[4]**