

**GREENLAWNS HIGH SCHOOL**  
**PHYSICS TERMINAL EXAMINATION 2023-24**

**STD. 9**

**DATE:** 9/10/2023

**TIME: 2 HR.**

**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 9 sides.
- 4] Section A is compulsory. Attempt any 4 complete questions from Section B.
- 5] Numerical answers should be in SI unit.
- 6] 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**

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

- i) For calculating the relative density of a substance, the ratio of the density of that substance to the density of water at  $4^{\circ}\text{C}$  only is taken into consideration because the
- a) density of water is maximum at  $4^{\circ}\text{C}$  and is constant.
  - b) density of water at  $4^{\circ}\text{C}$  is treated as the standard density.
  - c) density of water below or above  $4^{\circ}\text{C}$  changes.
  - d) all the above

Contd.....

ii) In which of the following cases the physical quantity obtained is not a vector quantity?

- a) The product of mass and velocity
- b) The ratio of thrust to area
- c) The product of mass and acceleration
- d) The ratio of displacement to time

iii) How does the time period of a simple pendulum get affected when it is taken to mines? Answer- The time period

- a) increases
- b) decreases
- c) remains the same
- d) can't say

iv) Aneroid barometer is more advantageous because it has

- a) shiny mercury in it
- b) vernier scale for accuracy
- c) no mercury in it
- d) Torricellian vacuum in it.

v) 1 joule = \_\_\_\_\_

- a) 0.24 cal
- b) 4.18 cal
- c) 1 cal
- d) 1 kcal

vi) In which of the following alphabets the lateral inversion is not noticeable?

- a) N
- b) S
- c) H
- d) P

vii) The renewable source of energy is

- a) Coal
- b) Natural gas
- c) Petroleum
- d) Nuclear fuel

viii) The pressure  $P_1$  at a certain depth in sea water and  $P_2$  at the same depth in well water are related as

- a)  $P_1 < P_2$
- b)  $P_1 > P_2$
- c)  $P_1 = P_2$
- d)  $P_2 - P_1 = \text{atmospheric pressure}$

- ix) During a basketball match, the players dribble the ball. This action is based on the
- a) Newton's first law      b) Newton's second law  
c) Newton's third law      d) None of these
- x) The displacement-time graph can never be parallel to \_\_\_\_\_ axis
- a) distance    b) velocity    c) time    d) displacement
- xi) Which instrument has a least count of 0.1mm?
- a) Metre scale    b) Vernier calliper    c) Screw gauge    d) Stopwatch
- xii) Inertia of a body is the measure of its
- a) weight    b) density    c) volume    d) mass
- xiii) The sudden rise in mercury level of a barometer indicates
- a) possibility of rain    b) extremely dry weather    c) possibility of cyclone    d) fair weather
- xiv) For a body floating in a vertical position, its centre of buoyancy
- a) lies below the centre of gravity    b) lies above the centre of gravity  
c) coincides with the centre of gravity of the body  
d) lies any where
- xv) When water is heated from 0°C to 20 °C, its volume
- a) goes on increasing    b) goes on decreasing    c) first decreases and then increases  
d) remains constant up to 4 °C and then increases

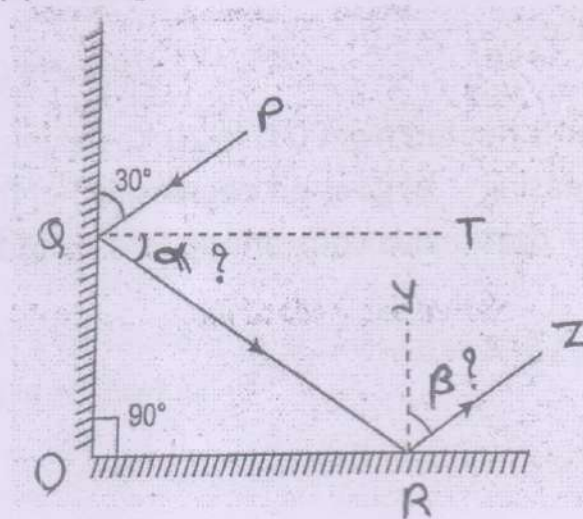
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**QUESTION 2**

- A] Why is it advisable for a driver to wear a seat belt while driving a car? [2]
- B] Define a gravitational unit of force in MKS system. How is it related to SI unit of force? [2]
- C] Give two uses of hydraulic press. [2]
- D] Name the types of forces acting on an object when it is partially or completely immersed in fluid. [2]
- E] Which type of expansion does the fluids show? Why? [2]
- F] Justify -The solar energy is the renewable source of energy but still the solar panels are not used on a larger scale. (Give 2 points) [2]
- G] What do you mean by Global warming. Give its two impacts on oceans. [3]

**QUESTION 3**

- A] Calculate the number of images formed when an object is placed symmetrically between two plane mirrors kept inclined to each other at an angle of  $45^\circ$ . [2]
- B] Observe the figure given below and calculate the value of  $\alpha$  and  $\beta$ . Also state the law you have used in calculating the values of  $\alpha$  and  $\beta$ . Do not copy the figure. [2]



Contd.....

C] A body weighs 250gf in air and 235gf when completely immersed in water. Calculate the i) apparent loss in weight of the body  
ii) buoyant force acting on it. [3]

D] Name the physical quantity, that the following units measure: [3]  
i) light year ii) metric tonne iii) shake

**SECTION B (40 MARKS)**

**ATTEMPT ANY 4 COMPLETE QUESTIONS FROM THIS SECTION**

**QUESTION 4**

A] Derive the second equation of motion. [3]

B] Fill in the blanks [3]

i)  $2\mu\text{m} = \underline{\hspace{2cm}} \text{ m}$

ii)  $720 \text{ min} = \underline{\hspace{2cm}} \text{ day}$

iii)  $25 \text{ kg} = \underline{\hspace{2cm}} \text{ quintal}$

C] i) State the properties of a unit which you will consider while selecting it for measuring a physical quantity. [2]

ii) State Newton's law of gravitation. Write its importance with respect to Astronomy. [2]

**QUESTION 5**

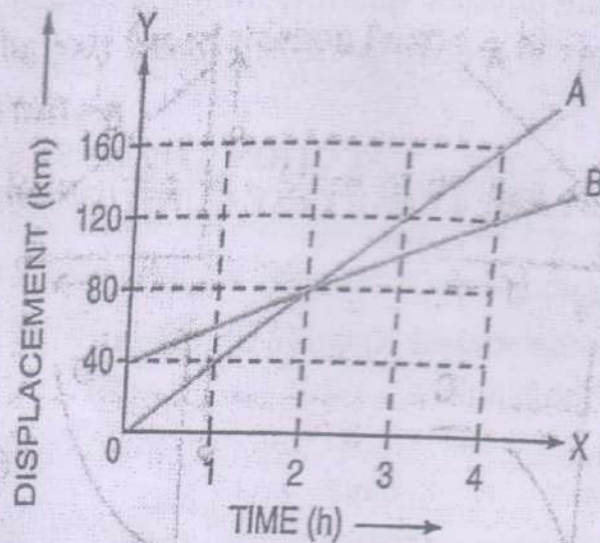
A] A stick dropped from the top of a tower falls freely under the [3]  
action of gravity. What will be the distance covered by it in first 4s?  
( $g = 9.8 \text{ ms}^{-2}$ )

B] Define: [3]

i) Acceleration ii) Buoyant force iii) Lateral inversion

Contd-----

C] Observe the displacement-time graph of motion of two cars A and B given below. Using it find: [4]



- i) the distance by which the car B was initially ahead of car A.
- ii) the velocity of car B using graphical method
- iii) the distance from start when the car A will catch the car B.

### QUESTION 6

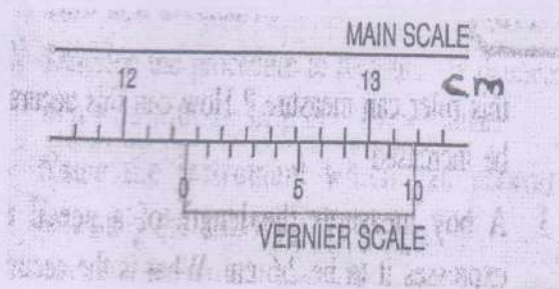
A] Name the following:

- i) The number of oscillations completed by a simple pendulum in unit time. [3]
- ii) The modified form of a simple barometer which is used in laboratory to measure the atmospheric pressure.
- iii) The law which states that when energy is put to work, a part of it is always converted in unuseful form as heat, due to friction or radiations.

Contd----

B] The figure given below shows the two scales of a vernier callipers to find the diameter of a sphere. [3]

Find: i) The least count of a vernier ii) the reading shown in the diagram (diameter of a sphere) assuming that there is no zero error.



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

- i) Mass and Weight (meaning)
- ii) Speed and Velocity (sign convention)
- iii) Heat and Temperature (the resultant quantity when two bodies having different magnitudes are kept in contact with each other)
- iv) Non-conventional sources of energy and Conventional sources of energy (pollution generation)

### QUESTION 7

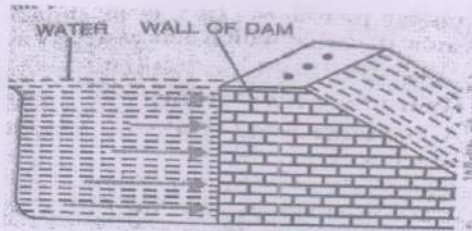
A] The upper blood pressure of a patient is 180 cm of Hg whereas the normal blood pressure should be 120 cm of Hg. Calculate the extra pressure generated by heart in SI unit.

Take density of Hg =  $13600 \text{ kgm}^{-3}$  and  $g = 9.8 \text{ ms}^{-2}$  [3]

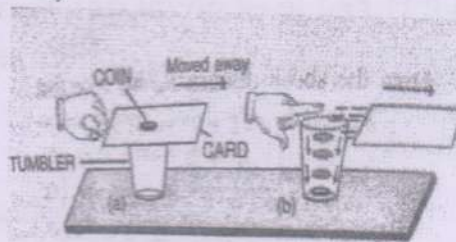
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B] Observe the figure given below and state the law/principle which is applicable in each of the following cases: [3]

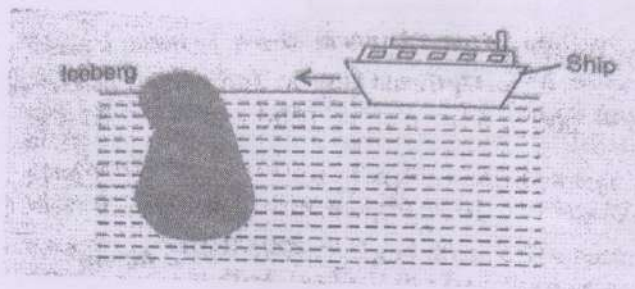
i)



ii)



iii)



C] Give one advantage and one disadvantage of each of the following:

- i) Wind energy    ii) Solar energy

[4]

**QUESTION 8**

A] A solid weighs 75 gf in air and 63 gf when completely immersed in water. Calculate:

[3]

- i) the upthrust    ii) the relative density of the solid

B] Give the scientific reasons of the following:

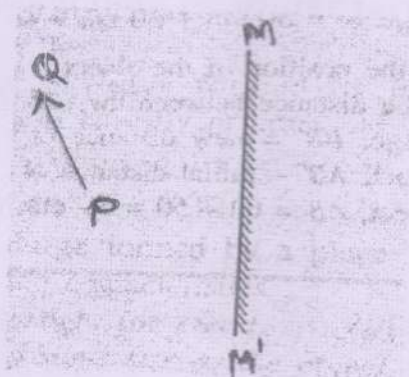
[4]

i) When a sailing ship is loaded with cargo, it submerges more in water.

ii) An athlete often lands on sand after taking a high jump.



C] The figure below shows an object PQ in front of a plane mirror MM'. Copy the figure in your answer booklet and show the formation of its image using two rays from each point P and Q. [3]



**QUESTION 9**

- A] i) Name the apparatus used to explain the anomalous expansion of water. [1]  
 ii) What are the final temperatures recorded by the upper and lower thermometers in the apparatus mentioned by you in the Q.9 A-i? [1]  
 iii) Give one consequence of anomalous expansion of water. [1]

B] Name the three types of contact forces. Do not give examples or explain it. [3]

C] The following table represents the velocity of a stone at different instants of time when it is thrown vertically upwards. Using this table draw a velocity-time graph and find the maximum height reached by the stone. [4]

Time (s)	0	1	2	3	4	5	6	7	8
Velocity (ms <sup>-1</sup> )	40	30	20	10	0	-10	-20	-30	-40

BEST OF LUCK.