

SAMAGRA SHIKSHA, KERALA
FIRST TERM EVALUATION 2023-24
PHYSICS

Standard: IX

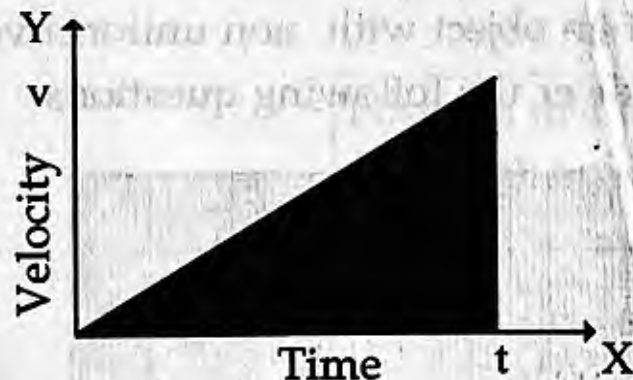
Time : 1½ Hour
 Total Score : 40

Instructions

- First 15 minutes is given as cool off time. This time is to be spent for reading and understanding the questions.
- Answer the questions based on instructions.
- Answer the questions according to score and time

Answer any three questions from 1 to 4. (One score each) (3 x 1 = 3)

1. Identify the relation of the first pair and complete the second pair (1)
 Density : kg/m^3
 Force : -----
2. Write down the odd one from the following on the basis of Pascal's law. (1)
 (Hydraulic press, Hydrometer, Hydraulic breake, Hydraulic jack)
3. Write down the name of frictional force that opposes relative motion of liquid layers. (1)
 (Surface tension, Buoyancy, Viscous force, Adhesive force)



4. What does the area of the shaded portion of the graph represent (1)
 (Acceleration, Force, Velocity, Displacement)

Answer any Seven questions from 5 to 13. (2 score each) (7 x 2 = 14)

5. A lactometer is essentially a hydrometer.
 - a. Write down the working principle of a lactometer. (1)
 - b. You are given two liquids, one of low density and the other of high density. In which liquid does the hydrometer sink more? (1)
6. Give reasons for the following.
 - a) Even though an iron nail sinks in water, a ship floats on water. (1)
 - b) When an object is immersed in a liquid, it remains in the same position. (1)

7. Figure shows capillary tube dipped in a liquid.

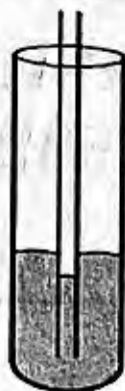


Figure (a)

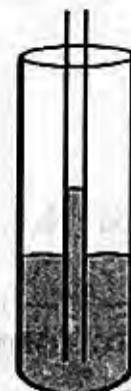


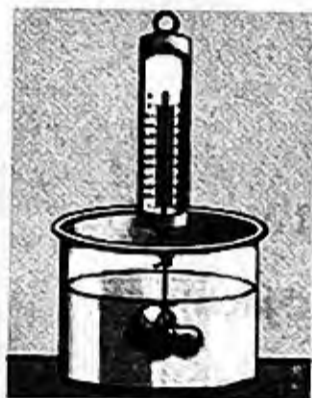
Figure (b)

a) Identify the correct figure. (1)

b) Justify your answer. (1)

8. A graph is a two-dimensional picture that can be drawn by relating two quantities to each other. Write down two uses of graphs. (2)

9. The weight of a stone immersed in water is measured using a spring balance as shown in the figure.

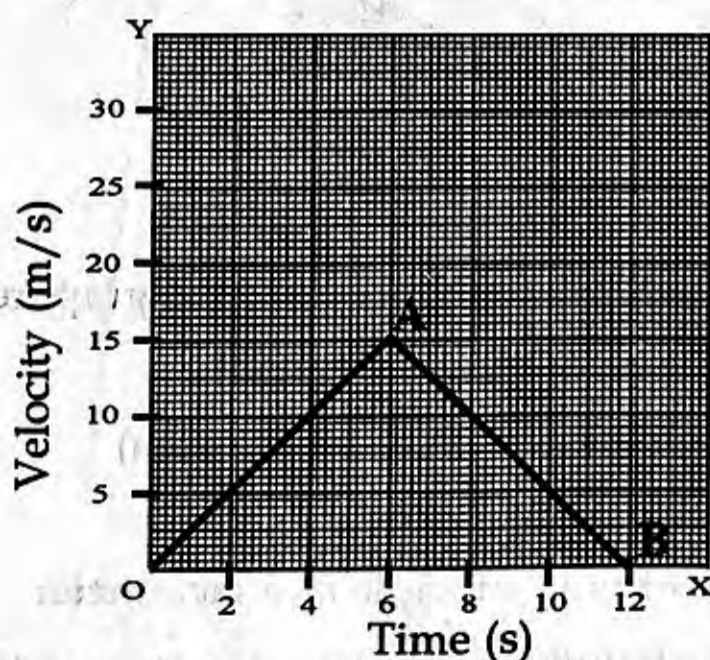


a) What change in the reading of a spring balance can be observed, if water is saturated with salt? (1)

b) Justify your answer. (1)

10. If the density of water is 1000 kg/m^3 and that of kerosene is 810 kg/m^3 , calculate the relative density of kerosene. (2)

11. The velocity-time graph of an object with non uniform velocity is given below. Observe the graph and answer the following questions



a. What is the velocity of the object in the 4th second? (1)

b. Find the instant at which it attains maximum velocity. (1)

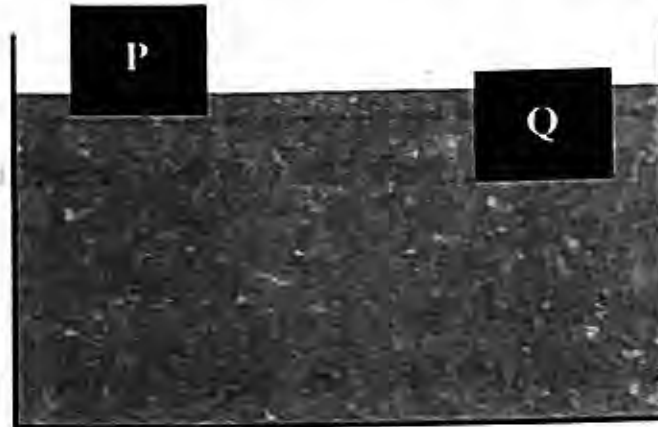
12. Write down any two equations of motion. What do each letter in these equations indicate? (2)

13. Write down the reasons for each of the following.

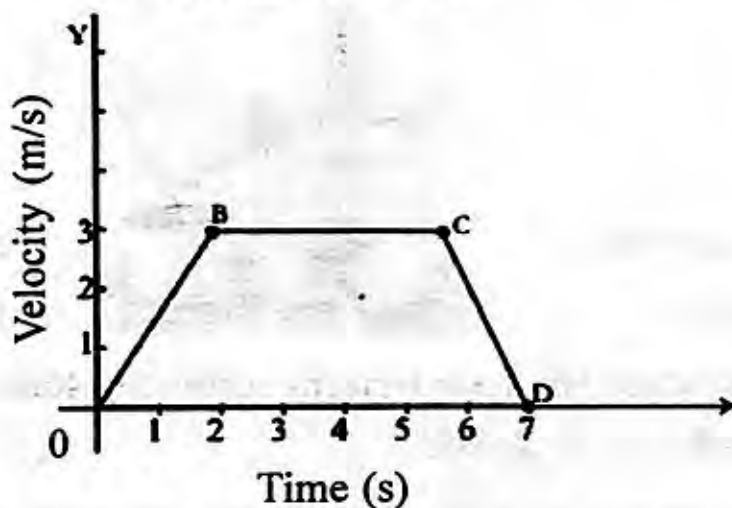
- a) Liquid surface behave like an elastic membrane. (1)
- b) Lands are ploughed before summer season. (1)

Answer any five questions from 14 to 19. (3 score each) (5 x3 = 15)

14. Two objects P and Q of the same size float in a beaker of water as shown.

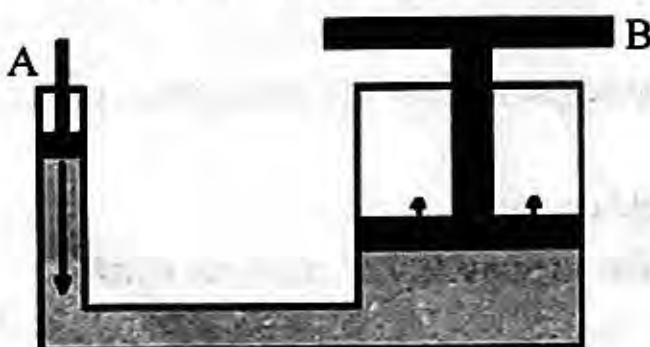


- a) Which of these objects displace more water? (1)
 - b) Which object experiences more buoyancy? Justify your answer. (2)
15. If a train traveling at a speed of 20 m/s comes to rest in 4s after braking,
- a) calculate acceleration of the train. (2)
 - b) find the distance traveled by the train after applying the brakes. (1)
16. The velocity - time graph of a moving body is given below. Analyse the graph and complete the table.



Position of the object in the graph	Nature of the motion
.....	Velocity increases
From B to C
From C to D

17. Figure shows two tubes of different cross-sectional area connected to each other. When a force is applied on piston A, a pressure of 2000 Pa is experienced.



- a) What will be the force on piston B, if its area cross section is 1 m². (1)
- b) Which law helps to find this force? State the law. (2)

18. Classify the following situations in to the table given below.

- Particles of the chalk stick to the black board.
- Water droplets that come close enough to touch each other coalesce to become a single drop.
- Wet cloths stick to the human body.

Cohesive force	Adhesive force

(3)

19. If a ball falls vertically downward from the top of a building of 40 m height with a velocity of 10 m/s ($g = 10 \text{ m/s}^2$),

- find the velocity of the ball at 1s. (1)
- find the velocity of the ball just before reaching the ground. (2)

Answer any two questions from 20 to 22. (4 score each)

(2 x 4 = 8)

20. Suppose three liquids kerosene, honey and alcohol are given.

- Which of these liquids has higher viscosity? (1)
- Suggest a way to reduce the viscosity of this liquid. (1)
- Based on viscosity, explain the first aid to be given to a person suffering from electric shock. (2)

21. A stone of mass 100 N is immersed into an overflowing jar of water as shown in the figure. If weight of the overflowing water is 25 N,



- what is the weight loss of the stone in the water? (1)
- what is the reason for this loss of weight? (1)
- is there any relationship between the buoyancy force experienced by the stone and the weight of water overflowed? Justify your answer. (2)

22. The position of an object in motion at various times is given in the following table.

Time (s)	0	2	4	6
Position (m)	0	4	8	12

- Using the data in the table suggest a suitable scale for drawing the position-time graph (1)
- Draw the position -time graph in the graph paper given (2)
- Analyse the graph and write down the characteristics of motion of the object. (1)
(Uniform motion / Non uniform motion)

Graph paper for Question no. 22

