DELHI PUBLIC SCHOOL NEWTOWN
SESSION: 2020-21
MONDAY TEST(ONLINE)

CLASS: IX **FULL MARKS: 40**

SUBJECT: PHYSICS **DATE: 01.12.2020**

Instructions:

- **All questions from Section A and Section B are compulsory.**
- **This paper consists of two printed pages.**
- **All working including rough work must be clearly shown on the same sheet as the rest of the answers.**

Section A

Question 1

(a) How is the mass of a metallic piece affected with increase in temperature? Find the mass of a body of volume 4 m^3 and of relative density 0.64.

(b) What is meant by centre of buoyancy? State its position with respect to centre of gravity for a body floating partially inside a liquid.

(c) A piece of wood weighs 65 gf in air when measured by a spring balance. Explain your observation on the scale of the spring balance when the wood attached to the hook of the spring balance is lowered in water.

(d) The mass of Vcm^3 of olive oil is M gram. How can its relative density be estimated?

(e) A good swimmer inhales sufficient quantity of air before attempting to go inside the water. Why is this so?

[2+2+2+2+2]

Question 2

(a) What is meant by anomalous expansion of a substance? How does silica exhibit such behavior?

(b) A wooden block just floats on water. Now some salt gets added in water. Explain your observation on the change in state of floatation if any.

(c) Compare between the internal energies possessed by a hot body and a cold body with suitable justifications.

(d) How does a fish use the organ which acts similar to the ballast tank of a submarine?

(e) A wooden block of volume 20 cm^3 floats on water with 16 cm^3 of its volume inside the liquid. Find the weight of the wooden block (in gf) in air.

[2+2+2+2+2]

Section B

Question 3

(a) Two bodies kept in contact will attain same temperature and possess equal amount of heat energy in them. Give your views for or against the statement whichever is applicable.

(b) A body weighs 12 N in water and 13 N in a liquid of R.D. 0.6. Find the weight of the body in air. A student attempts to find the relative density of a solid having density greater than water but soluble in it. He chooses a spring balance. What more does he require? Also give the relevant working formula.

(c) Equal masses of water and a liquid of relative density 2 are mixed together. Show that the density of the mixture will be 1.33 g/cm^3

[3+3+4]

Question 4

(a) Which type of expansion (amongst the usual three types) is applicable for fluids and why? Arrange the extent of expansion for solids, liquids and gases in descending order.

(b) Venkat was amazed to see his grandpa letting the tap left dripping in on one winter night. He couldn't figure it out when he was asked to find out the reason behind it. Can you help Venkat to arrive at the answer? What precaution do farmers usually apply to protect the capillaries of plants on severe cold nights?

(c) A cubical wooden block of side 10 cm floats at the interface between oil and water with its lower surface 4 cm below the interface. If R.D. of oil is 0.6, find out the mass of the block (in cgs unit)?

[3+3+4]