DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2021-22
MONDAY TEST

CLASS: IX **FULL MARKS: 40**

SUBJECT: PHYSICS **DATE: 13.12.21**

General Instructions:

- **All questions are compulsory.**
- **Write the question number carefully before answering the questions.**
- **This paper contains two printed pages.**

Question 1

a) How are the density and volume of a metallic piece affected with rise in temperature?
b) A stone piece weighs 25 gf in air and 20 gf in water. Find the relative density of the stone.
c) The density of turpentine is 870 kg/m^3. Express the density in CGS system of units and the relative density of turpentine.
d) A body of volume 100 cm^3 weighs 1 kgf in air. How much does it weigh in water (in kgf)?
e) Why is no change in level of water observed when a floating piece of ice melts?

[2+2+2+2+2]

Question 2

a) Why are destruction of crops inevitable during severe cold nights if no measure is taken?
b) State the two laws of thermodynamics that govern the flow of energy in the ecosystem.
c) Mention two activities that are responsible for increased concentration of carbon dioxide emission.
d) What is centre of buoyancy? State its position with respect to centre of gravity for a partially submerged body inside a liquid.
e) State one merit and one drawback of wind energy.

[2+2+2+2+2]

Question 3

a) A wooden block just floats in water. What changes in the state of floatation is observed when (i) salt is added to water and (ii) water is heated? Give reasons for your answers.
b) What are the three characteristics of any source of energy?
c) State the three factors that determine the amount of heat energy contained in a body.

[4+3+3]

Question 4

a) How do the greenhouse gases (provided the concentration is not high) maintain a favorable temperature on the earth's surface?
b) A given mass of water is cooled from 10°C to 0°C. Represent the changes in observation in a (i) volume versus temperature and (ii) density versus temperature graph.

c) An aluminium cube of side 5 cm and relative density 2.7 is suspended from a thread in alcohol of relative density 0.80. Find the tension of the thread.

[3+4+3]