DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2021-22
MONDAY TEST

CLASS: IX **FULL MARKS: 40**

SUBJECT: PHYSICS **DATE: 13.07.2021**

General Instructions:

- **This paper consists of two printed pages.**
- **All questions are compulsory.**
- **Copy the question number carefully before answering the questions.**
- **Marks will be deducted for spelling errors.**

Question 1 **[2+2+2+2+2]**

(a) Can we have an eastward velocity but a westward acceleration? Give your comments for your answer.

(b) Express the derived units of (i) watt and (ii) pascal in terms of kilogram, metre and second.

(c) What is the ratio of the acceleration due to gravity at two places where the ratio of time period of the pendulum is 2: 3?

(d) On what principle does a screw gauge work? Express the least count of a micrometer screw gauge in cm.

(e) What are the functions of vernier scale and strip in a vernier calipers?

Question 2 **[2+2+2+2+2]**

(a) Which quantity does the speedometer of a vehicle measure? Define this quantity.

(b) Why do two bodies of different masses released from same height in vacuum reach the ground simultaneously?

(c) Draw the velocity – time graph of a freely falling body. How can you find the acceleration of the body from the graph?

(d) Write any two properties of a unit to measure a physical quantity.

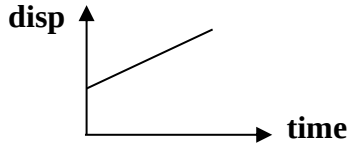
(e) Which unit is used to find the mass of large heavenly bodies? How is this related to the SI unit of mass?

Question 3 **[3 +4 +3]**

(a) A car is moving in a straight line with a speed 36 km/h initially. Brakes are now applied and the car stops in 5 s. Find the speed in m/s and retardation produced. What will be the speed of the car after 3 s of applying the brakes?

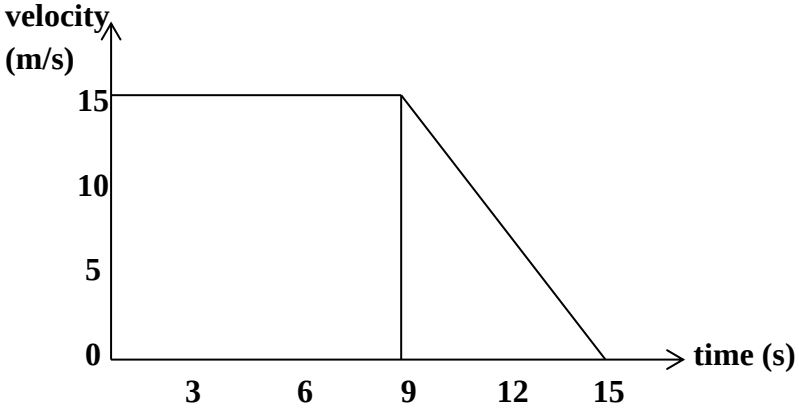
(b) Why do we measure the time period for more than one oscillation? Which type of pendulum is used in a clock? What is it's feature?

(c) Can we find the velocity and acceleration from the following graph? Explain.



Question 4 **[4+3+3]**

(a) The motion of a car is as shown. Study the velocity-time graph and answer the following questions



(i) Find out the acceleration for the first 9 s.

(ii) Determine the retardation in the last 6 s.

(iii) What is the total distance travelled?

(b) Prove the relation $s = ut + (½)at^2$ either graphically or by analytical method.

(c) A body moving with constant acceleration travels 3m and 8m in 1 s and 2s respectively. Find the initial velocity and the acceleration.