



DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2023-24
MONDAY TEST

CLASS: IX

SUBJECT: PHYSICS

FULL MARKS: 40
DATE: 12.06.2023

General Instructions:

- This paper consists of three printed pages.
 - All questions are compulsory.
 - Marks will be deducted for spelling errors.

SECTION-A

Question 1

$$[7 \times 1 = 7]$$

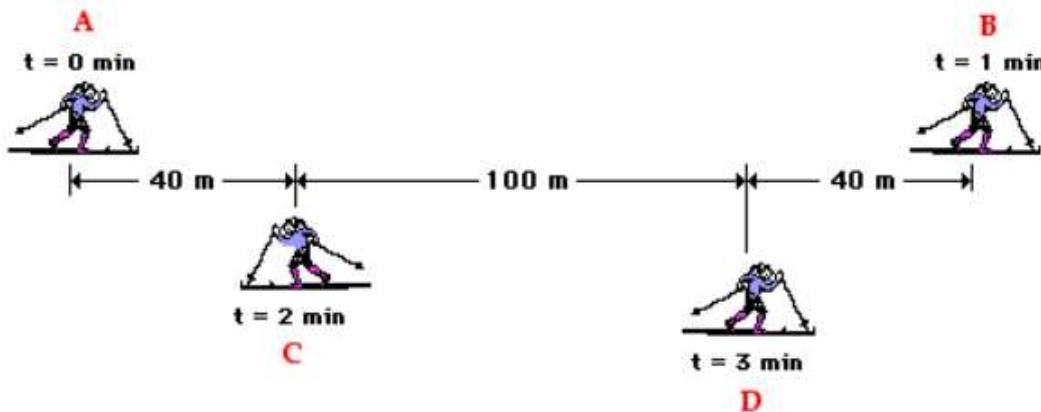
(vii) Which of the following statements is NOT true about uniform circular motion

- (a) The distance is always equal to the displacement
- (b) Velocity is always perpendicular to the radius of the circle
- (c) The speed of the body remains constant
- (d) The velocity of the body is continuously changing

Question 2

[3+2+2+2+2+2]

- (a) i) What is instantaneous speed?
ii) When does it become relevant?
iii) _____ of a vehicle measures the instantaneous speed.
- (b) State any two essential properties of a unit.
- (c) Find the unit of power by its definition, in terms of fundamental units.
- (d) Draw a velocity-time graph for a freely falling object.
- (e) The average mass of an atom is 2.5×10^{-25} kg. Find the number of Uranium atoms in 1 mg of it.
- (f) A skier moves from A to B, then C and finally reaches D in the same line. Study the diagram to determine the resulting displacement and the distance traveled by the skier during these three minutes. [Positions A, B, C and D are on the same horizontal line.]



SECTION B

Question 3

[3 + 3 + 4 = 10]

- (a) Draw T^2 vs l graph. How will you use this graph to find acceleration due to gravity?
- (b) A pendulum of effective length 2.5 m has a time period 3.14 s. Calculate the time period of the pendulum if the effective length is made one fourth of the initial length.
- (c) (i) Two pendulums P and Q have lengths 200 cm and 50 cm respectively. Which pendulum will make more oscillations per minute and why?
(ii) Write any two differences between speed and velocity.

Question 4

[3 + 3 + 4 = 10]

- (a) A train is moving with an uniform velocity 25 ms^{-1} . Brakes are applied to produce a retardation 0.5 ms^{-2} . Find the velocity after 10s and time to stop the train.
- (b) Derive the equation $S = ut + \frac{1}{2}(at^2)$ for uniformly accelerated motion by graphical method.

(c) With reference to the velocity-time graph shown below, calculate:

- (i) the maximum acceleration during the journey.
- (ii) displacement travelled in 40 s to 50 s.
- (iii) the uniform velocity if any, during the motion?
- (iv) the retardation.

