



DELHI PUBLIC SCHOOL NEWTOWN
SESSION 2023-24
MONDAY TEST

CLASS: IX

FULL MARKS: 40

SUBJECT: PHYSICS

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

[7×1 = 7]

- (i) The size of a nucleus of an atom is generally measured in _____ unit.
(a) angstrom (b) fermi (c) nanometre (d) not listed above
- (ii) The velocity of a body starting from rest is directly proportional to time. Which is uniform?
(a) velocity only
(b) Acceleration only
(c) both velocity and acceleration
(d) none of the above
- (iii) The time periods of two similar simple pendulums at two different places are in the ratio 2:1, then their ratio of acceleration due to gravity is
(a) 4:1 (b) 1:4 (c) 1:2 (d) 2:1
- (iv) Area under velocity versus time graph gives
(a) displacement (b) acceleration (c) both a and b (d) speed
- (v) The direction of motion is determined by
(a) positive or negative sign of velocity
(b) positive or negative sign of acceleration
(c) both a and b
(d) none of the above.
- (vi) Find the odd one out
(a) ratchet (b) strip (c) thimble (d) sleeve

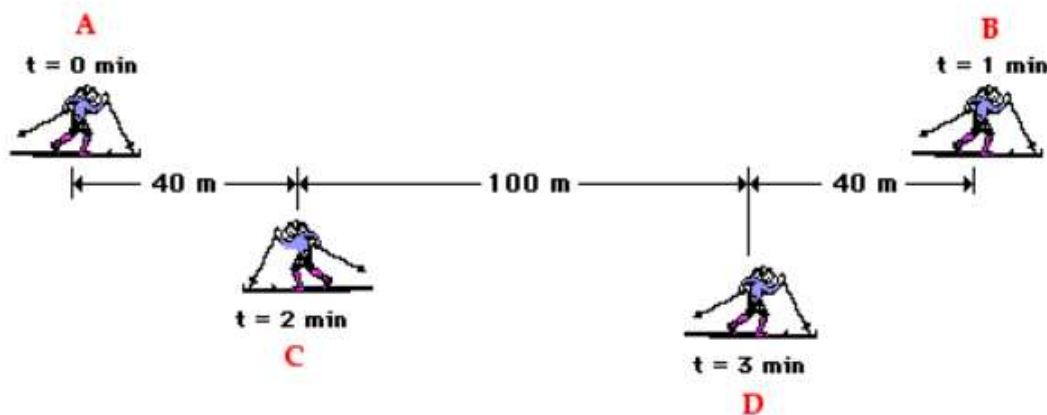
(vii) Which of the following statements is NOT true about uniform circular motion

- (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.

