

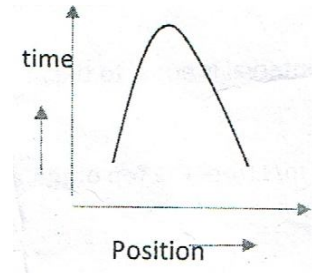
DELHI PUBLIC SCHOOL, JAMMU

ASSIGNMENT (PERIODIC TEST -I)

Class: XI

Subject: Physics

Q1. Is the time variation of position shown in figure observed in nature? Give two reasons in support of your answer.



(b) If we interchange the position and time axis, will the graph shown be possible?

Q2. Give an example when a body has zero velocity but still has acceleration.

Q3. Two balls of different masses (one lighter and the heavier) are thrown vertically upward with same initial speed. Which one will rise to a greater height? Justify.

Q4. A ball is thrown vertically upwards. After sometime it returns back to earth. Draw speed-time graph for the ball. Neglect its resistance.

Q5. The angular diameter of the sun from the earth is 15 minutes. If the distance of the earth from the sun is 1.48×10^{11} m. Calculate the diameter of the sun.

Q6. In Vander Wall's equation, $(P + a/V^2)(V-b) = RT$,

where P is pressure, V is volume, T is temperature and R is gas constant. What are the dimensions of a and b?

Q7. The displacement x in meters of a particle of mass m kg moving in one direction under the action of force is related to time t in seconds, given by the equation $t = \sqrt{x} + 3$. Find the displacement of the particle when its velocity is zero.

Q8. What is the magnitude and direction of $(\hat{i} + \hat{j})$?

Q9. For what value of λ , $\vec{A} = (2\hat{i} + \lambda\hat{j})$ is perpendicular to $\vec{B} = (4\hat{i} + \hat{j})$?

Q10 Draw x-t and v-t graphs for the motion in following situations:

(i) Uniform positive acceleration (ii) Uniform negative acceleration (iii) no acceleration

Q11. A person is standing on road with his open umbrella at 30° with the vertical to save himself from wetting. Then he throws his umbrella and starts running at 5km/hr. Now he finds that rain drops are hitting his head vertically. Find the speed of the rain drops with respect to (i) road (ii) the moving person.

Q12. Show that the path followed by projectile is a parabolic when projectile is fired at an angle with the horizontal. -

(b) A projectile is fired with a velocity of 30 m/s at an angle of 60° with the horizontal. Calculate its velocity at the highest point.

Q13. Show that the displacement of a particle in given time interval is equal to the area under velocity time graph of uniform motion.

(b) A ball is thrown vertically upwards with a speed of 19.6 m/s from the top of the tower returns to earth in 6 sec. Find the height of the tower.

Q14. Derive an equations of motion by calculus method.

Q15. Derive an expression for time period of simple pendulum where 't' is the time period, 'a' is the acceleration, 'L' be the length of string and 'm' be the mass of the bob.

Q16. Give dimensional formula:

1. Angular acceleration
2. Surface tension
3. Moment of inertia
4. Velocity gradient

Q17. Write the limitation of dimensional analysis.

Q18. Define units. Give difference between fundamental unit and derived unit.

Q19. Convert 5N to Dynes using dimensional analysis.

Q20. Find the significant figure in the following

- i) 4.23×10^3
- ii) 620.005
- iii) 200×10^2