Holiday Homework(2026-2027)

Name: _____

Date: _____/ _05____/ 2026 **Class: XI-A1,A2**

Subject: Physics

CLASS -XI (Physics)

Instruction-

1.Learn chapters that have been done in class for unit test1.

2.Creat a flow chart of at least 40 physical quantity including their dimension formula, unit and symbol in your notebook using your creativity.

3.Make a collage /picture on a cartridge sheet of latest scientific research using your creativity and innovation.

4)complete the assignment and M.C.Q. in the assignment notebook.

ASSIGNMENT: Unit 1

GENERAL INSTRUCTIONS:

A: The numerical are based on application of theory content. Attempt them in your physics notebook as practice assignment.
B: Do all questions in sequence.

1)Density of air is 1.293 kg/m3.Express this value in cgs unit

2) What are the advantages of SI system of units?

3) Show that (i) momentum & impulse (ii) pressure & stress (iii) Angular velocity and frequency (iv)angular momentum & Planck's constant (v) work & Energy have same dimensions6 Define some units for large and small lengths

4 Calculate the angle of (i) 1° (ii)1' (iii) 1'' in radians.

5Classify the physical quantities on the basis of dimensions. Are all constants dimensionless? Comment.

6The frequency of an oscillating drop may depend on the radius, density and the surface tension of the liquid Deduce the formula dimensionally.

7 The time period of a simple pendulum depends on the length of the pendulum and the acceleration due to gravity. Obtain the expression for the time period dimensionally.

8. The velocity of the water waves depends on the wavelength density of the water and theAcceleration of the water due to gravity. Deduce by the method of dimensions the relationship between these quantities.

9. A large star oscillates and the time period depends on the radius of the star, the density of the fluid and the gravitational constant G. Obtain the expression for the time period dimensionally.

10. Check the correctness of the relation

a). $\lambda=h/mv$

b). $T=2\pi l/g$

c). $F=mv/r$

11.Name the fundamental physical quantity whose SI unit has not changed since the inspection of International system of units.

12. Write the dimensional formulae of (i) power (ii) surface tension.

13. Can a quantity have units but still be dimensionless?give examples

14. Can a quantity have dimensions but still have no units? give examples

15. Write 2 e .g. of non-dimensional variables.

ASSIGNMENT: Unit 2

1. On a 60 km track, a train travels the first 30 km with a uniform speed of 30 km h—1. How fast must the train travel the next 30 km so as to average 40 km h—1 for the entire trip? **[Ans. 60 km h-1]**

2. A body travels a distance s1 with velocity v1 and distance s2 with velocity v2 in the same direction. Calculate the average velocity of the body.

3. A body covers one-third of its journey with speed ‘u’, next one-third with speed ‘v’ and the last one-third with speed ‘w’. Calculate the average speed of the body during the entire journey.

4. A car covers the first half of the distance between two places at a speed of 40 kmh—1 and the second half at 60 kmh—1. What is the average speed of the car? **[Ans. 48 kmh-1]**

5. A train moves with a speed of 30 kmh—1 in the first 15 minutes, with another speed of 40 kmh—1 the next 15 minutes, and then with a speed of 60 kmh—1 in the last 30 minutes. Calculate the average speed of the train for this journey. **[Ans. 47.5 kmh-1]**

6. A body travels a distance s1 with velocity v1 and distance s2 with velocity v2 in the same direction. Calculate the average velocity of the body.

7.The position of an object moving along x-axis is given by $x = a + bt^2$, where a = 8.5 m, b = 2.5 ms^{-2} and t is measured in seconds. What is its velocity at t = 0 s and t = 2 s? What is the average velocity between t = 2 s and t = 4 s? **[Ans. 10 ms^{-1}], 15.0 ms^{-1}]**

7.The displacement (in metre) of a particle moving along x-axis is given by $x = 18t + 5t^2$. Calculate :

(i) the instantaneous velocity at t = 2 s,
(ii) average velocity between t = 2 s, and t = 3 s,
(iii) instantaneous acceleration. **[Ans. (i) 38 ms^{-1} (ii) 43 ms^{-1} (iii) 10 ms^{-2}]**

8.The displacement x of particle varies with time t as $x = 4t^2 – 15t + 25$.
Find the position, velocity and acceleration of the particle at t = 0. When will the velocity of the particle become zero? Can we call the motion of the particle as one with uniform acceleration? **[Ans. 25 m, 15 ms^{-1}, 8 ms^{-2}, 1.875 s]**

9. velocity of a particle is given by the equation, $v = 2t^2 + 5$ cms^{-1}. Find (i) the change in velocity of the particle during the time interval between t_1 = 2 s and t_2 = 4 s (ii) the average acceleration during the same interval and (iii) the instantaneous acceleration at t_2 = 4 s. **[Ans. 24 cms^{-1}, 12 cm^{-2}, 16 cms^{-2}]**

10. The distance x of a particle moving in one dimension, under the action of a constant force is related to time t by the equation, $t = \sqrt{x} + 3$, where x is in metres and t in

seconds. Find the displacement of the particle when its velocity is zero.
[Ans. 0]

11. The displacement of a particle along X-axis is given by $x = 3 + 8t + 7t^2$. Obtain its velocity and acceleration at t = 2s.

12 A driver takes 0.20 s to apply the brakes after he sees a need for it. This is called the reaction time of the driver. If he is driving car at a speed of 54 km h^{-1} and the brakes cause a deceleration of 6.0 ms^{-2}, find the distance travelled by the car after he sees the need to put the brakes.
[Ans. 21.75 m

13. A jet plane starts from rest with an acceleration of 3 ms^{-2} and makes a run for 35 s before taking off. What is the minimum length of the runway and what is the velocity of the jet at take off? **[Ans. 1837.5 m, 105 ms^{-1}]**

14. On a foggy day two drivers spot each other when they are just 80 metres apart. They are travelling at 72 km h^{-1} and 60 km h^{-1}, respectively. Both of them applied brakes retarding their cars at the rate of 5 ms^{-2}. Determine whether they avert collision or not. **[Ans. They will not collide]**

15 A motor car starts from rest and accelerates uniformly for 10 s to a velocity of 20 ms^{-1}. It then runs at a constant speed and is finally brought to rest in 40 m with a constant acceleration. Total distance covered is 640 m. Find the value of acceleration, retardation and total time taken.
[Ans. 5 ms^{-2}, 39 s]

16. An athlete runs a distance of 1500 m in the following manner. (i) Starting from rest, he accelerate himself uniformly at 2 ms^{-2} till he covers a distance of 900 m. (ii) He, then runs the remaining distance of 600 m at the uniform speed developed. Calculate the time taken by the athlete to cover the two parts of the distance covered. Also find the time, when he is at the centre of the track. **[Ans. 30 s, 10 s, 27.4 s]**

17. A race car accelerates on a straight road from rest to a speed of 180 kmh^{-1} in 25 s, Assuming uniform acceleration of the car throughout, find the distance covered in this time. **[Ans. 625 m)**

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