

BAL BHARATI PUBLIC SCHOOL
GRH MARG RAJINDER NAGAR NEW DELHI
HOLIDAYS HOMEWORK 2023
CLASS XI-PHYSICS

OBJECTIVES:

- To extend the concept of learning beyond the classroom
- To nurture the development of good study habits
- To encourage the use of independent research skills

TASK 1

To design an activity based upon the laws of physics and write down the observations and inference based on the projects.

TASK 2: Solve the following special practice sheet consist of subject based questions

Q1: Derive an expression of maximum possible error in Z where $Z = \frac{A^n}{B^m}$.

Q2: write the dimensions of (i) angular momentum (ii) moment of inertia

Q3: Check the correctness of the equation $h = \frac{2Sd}{rg \cos \theta}$. Where S is surface tension, d is density, r is radius and g is acceleration due to gravity.

Q4: The number of particle crossing a unit area perpendicular to x axis is $n = -D \frac{(n_2 - n_1)}{(x_2 - x_1)}$ per unit time.
 n_1, n_2 are the numbers of particles per unit volume. x_1, x_2 are the distances. What is the dimensional formula for D .

Q5: A car moving with uniform acceleration observed to cover two successive kilometers in 30 s and 20 s respectively. Find the acceleration. [Ans: $2/3 \text{ m/s}^2$]

Q6: two cars starts off a race with velocities 2 m/s and 4 m/s travels with uniform acceleration 2 m/s^2 and 1 m/s^2 respectively along the same direction. What is the length of the path if they reach the final point at the same time? [Ans: 24 m]

Q7: A body starts from rest observe to cover 20 m in 1 second and 40 m in next second how far had it travelled before the first observation was taken. [Ans:]

- Q8: a body covers 20 m in 7th second and 24 m in 9th second with uniform acceleration how much distance will it cover in 15 seconds?
- Q9: A body is moving with uniform acceleration its velocity after 5 seconds is 25 m/s and after 8 second is 34 m/s . Find the distance travelled by the object in 12th second.
- Q10: On a 60 km track, a train travels first 30 km with a speed of 30 kmph , how fast the train must travel next 30 km so as to have av speed 40 kmph for the entire trip? [Ans: 60kmph]
- Q11: a car travels first half time with 50 km/h and next half time with 60 km/h. find the av speed of the car.
- Q12: velocity of a car is given by $v = 3t^2 + 4t + 5$. Find the distance travelled by the car in first 5 seconds.
- Q13: How long will a boy sitting near the window of a train traveling with 54 km/h see another train passing by in opposite direction with a velocity of 36 km/h. the length of slow moving train is 100m. [Ans: 100m]
- Q14: The displacement of a particle moving with constant acceleration is related with time according to the equation $t = \sqrt{s} + 3$. Find the displacement of the particle when its velocity is zero. [Ans : zero]
- Q16: Two balls are thrown simultaneously; ball 'A' velocity upward with 20 m/s from the ground and Ball 'B' with vertically downward from height 40 m with same speed and along the same line of motion. At what height they will collide? [Ans: 15.1 m]
- Q17: A ball is dropped from the top of a tower it covers 24.5 m in last second of its journey before it reaches the ground. Find the height of the tower. (($g = 9.8 m / s^2$)). [Ans: 44.1 m].
- Q18: A rocket is fired vertically from the ground with an acceleration of $10 m / s^2$. The fuel is finished in 1 minute and it continues to move up. What is the maximum height attained. (($g = 9.8 m / s^2$)). [Ans: 36.4 km]
- Q19: A balloon is ascending with 14 m/s , at a height of 98 m above the ground a food packet is dropped. After how much time and with what velocity does it hit the ground = $9.8 m / s^2$). [Ans: 6.12 s and - 45.98 m/s]
- Q20: A body is dropped from rest at a height of 150 m and simultaneously another ball is dropped from a point of 100 m above the ground. What Is the difference in the height of the balls after

they have fallen (i) 2 seconds, (ii) 3 seconds.

[Ans: 50 m in each case].