# Physics Numerical Problem Set

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**CBSE/HS Class 11 standard – Important Numerical Problems**

1)A particle of mass 0.5 kg travels in a straight line with velocity $v=ax^{3/2}$ , where a 5 $m^{-1/2}$ $s^{-1}$ . What is the work done by the net force during its displacement from x=0 to x=2 meter?

2)A body of mass 6 kg is acted upon by a force which causes a displacement in it given by $x=t^2/4$ meter., where t=time in second. The work done by the force in 2 sec is :_____.

3)If a person can throw a stone to maximum height of h meter vertically, then the maximum distance through which it can be thrown horizontally by the same person is:

_____.



4)A particle is moving with a constant speed V in a circle. What is the magnitude of average velocity after half rotation?

5)A ball with MOI of 1.6, mass of 4 kg and radius of 1 m rolls without slipping down an incline which is 10 meter high. What is the speed of the ball when it reaches the bottom of the incline?

6)Three bodies a ring, a solid cylinder and a solid sphere roll down the same inclined plane without slipping. They start from rest. The radii of the bodies are same. Which of the bodies reaches the ground with maximum velocity?

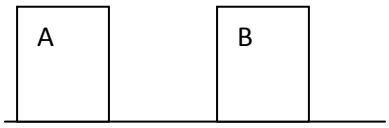
7)The time period of a satellite of earth is 5 hours, if the separation between the earth and the satellite is increased to 4 times the previous value, the new time period would be_____.

8)A ball is thrown from a point with a speed $V_0$ at an angle of projection Ø. From the same point and at the same instant, a person starts running


with a constant speed $V_0/2$ to catch the ball. Will the person be able to catch the ball? If yes, what should be the angle of projection?

9) A particle is projected at $60^0$ to the horizontal with a KE with a value K. The KE at the highest point is_____.

10)




The blocks A and B have equal masses. The surface of A is smooth but that of B has a friction coeff of 0.1 with the floor. Block A is moving at a speed of 10 m/s towards B which is kept at rest. Find the distance travelled by B if (a) the collision is perfectly elastic and (b) the collision is perfectly inelastic. g=10 $m/s^2$.

(Refp54)

11) A particle moves along the x axis from x=0 to x=5 m under the influence of a force F (in N)



given by $F=3x^2-2x+7$.Calculate the work done.
(Refp57)

12) A uniform chain of length L and mass M is lying on a smooth table and one third of its length is hanging vertically down over the edge of the table. What is the work required to pull the hanging part on to the table?

13) Calculate the distance below and above the surface of the earth, at which the value of acceleration due to gravity becomes ¼ th of that at earth's surface?

14) The planet Pluto is on average 40 times as far from the sun as the earth is. What is Pluto's orbital period in years?