BCM SCHOOL, BASANT AVENUE, DUGRI ROAD, LUDHIANA

ASSIGNMENT – 2

SUBJECT – PHYSICS

CLASS – XI

CHAPTER – MOTION IN PLANE

ASSIGNMENT PROJECTILE MOTION

Q1). A projectile is thrown at an angle θ with the horizontal with kinetic Energy E. Calculate the potential energy at the top most point of the trajectory.

Q2). A projectile is thrown with an initial velocity of $x\hat{i} + y\hat{j}$. The Range of the projectile is twice the max. height of the Projectile. Calculate y/x.

Q3). A projectile has a range of 50 m and reaches a max. height of 10m. What is the elevation of the projectile?

Q4). From the same point, two balls A and B are thrown simultaneau A is thrown vertically up with a velocity of 20 m/s. B is thrown with a velocity of 20m/s at an angle of 60° with the vertical. Determine the separation b/w the balls at $t = 1$ second.

Q5). A ball is thrown with an initial velocity of 100 m/s at an angle of 30° above the horizontal. How far from the throwing point will the ball attain its original level? Solve the problem without using formula for horizontal Range.

Q6). Prove that the velocity at the end of flight of an oblique projectil is the same in magnitude as at the beginning but the angle that it makes with the horizontal is negative of the angle of projection.

Q7). The max. Range of a projectile is $\frac{2}{\sqrt{3}}$ times its actual range. What is the angle of projection for the actual range?

Q8). The eqⁿ of trajectory of an oblique projectile is:

$$y = \sqrt{3}x - \frac{gx^2}{2}$$

What is the initial velocity and the angle of projection?

Q9). Two projectiles P and Q are projected with velocities $\sqrt{2}v$ and v respectively. They have the same range. If P is thrown at an angle of 15° with the horizontal, then what is the angle of elevation of Q?

Q10). A body of mass m is thrown horizontally with a velocity of 60 km/h from the top of a tower of height h. It touches the level Ground at a distance of 400m from the foot of the tower. Now, a body of mass 2m is thrown horizontally with a velocity of 30 km/h from the top of a tower of height 4h. At what distance from the foot of the tower would it touch the level Ground?