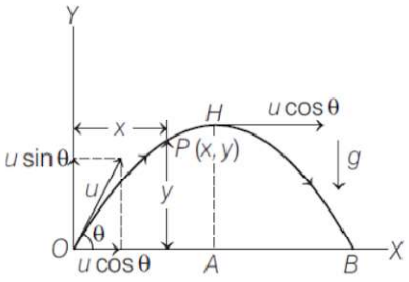
CLASS: 11th CBT AUG (PHYSICS)

(Questions 1-5)

Projectile motion is a form of motion in which an object or particle is thrown with some initial velocity near the earth's surface and it moves along a curved path under the action of gravity alone. The path followed by a projectile is called its trajectory, which is shown below. When a projectile is projected obliquely, then its trajectory is as shown in the figure below:



(1) The angle between velocity and acceleration at highest point projectile path is:

a) 45° b) 0° c) 90° d) None of these

Answer: c) 90°

(2) The acceleration of the object in horizontal direction is

(a) constant (b) decreasing (c) increasing (d) zero

Answer: (d) zero

(3) What is the angle of projection at which maximum height and range are equal?

(a) tanθ= 3 (b) tanθ= 4 (c) tanθ= 2 (d) tanθ= 1

Answer: (b)tanθ= 4

(4) A cricket ball is thrown at a speed of 28 m/s in a direction 30° with the horizontal. The time taken by the ball to return to the same level will be:

(a) 2.0 s (b) 3.0 s (c) 4.0 s (d) 2.9 s

Answer: (d) 2.9 s

(5) The example of such type of motion is

(a) motion of car on a banked road (b) motion of boat in sea

(c) a javelin thrown by an athlete (d) motion of ball thrown vertically upward

Answer: (c) a javelin thrown by an athlete

(Questions 6-10)

According to Newton's second law of motion, F= ma, where F is the force required to produce an acceleration a in a body of mass m. If a = 0 then F=0 i.e., no external force is required to move a body uniformly along a straight line. If a force F acts on a body for t seconds, the effect of the force is given by impulse=F x t=change in the momentum of the body, where momentum is given by product of mass and velocity.

6. A body of mass 50g is moving with a velocity of 10m/s. Its velocity increases to 20m/s in the same direction as a force exerted on it for 1s. The impulse of the force is:

(a) 0.5 Ns (b) 500 Ns (c) 50 Ns (d) 5 Ns

Answer: (a) 0.5 Ns

7. A shell of mass 10 kg is moving with a velocity of 10 ms-1 when it blasts and forms two parts of mass 9 kg and 1 kg respectively. If the first mass is stationary, the velocity of the second is:

(a) 1 m/s (b) 10 m/s (c) 100 m/s (d) 1000 m/s

Answer: (b) 10 m/s

8. Two masses of M and 4M are moving with equal kinetic energy. The ratio of their linear momenta is:

(a) 1:8 (b) 1:4 (c) 4:1 (d) 1:2

Answer: (d) 1:2

9. A body of mass 12 kg travels according to the law v(t) = (2t + 10) m, then force acting on it at t=4 seconds is:

(a) 24 N (b) 4 N (c) 0 N (d) 16 N

Answer: (a) 24 N

10. A particle of mass m moving with a velocity v strikes a stationary particle of mass 2m and sticks to it. The speed of the system will be:

(a) v/2 (b) 2v (c) v/3 (d) 3v

Answer: (c) v/3