KVS RO BPL(CLASS XI CBT-PHYSICS SEPTEMBER 2023-24)

QUESTION PAPER FOR CLSASS XI CBT SEPTEMBER 2023-24
**CLASS :-XI**
SUBJECT:-PHYSICS
TOPIC :- MOTION IN A PLANE, LAWS OF MOTION

MOTION IN A PLANE

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...
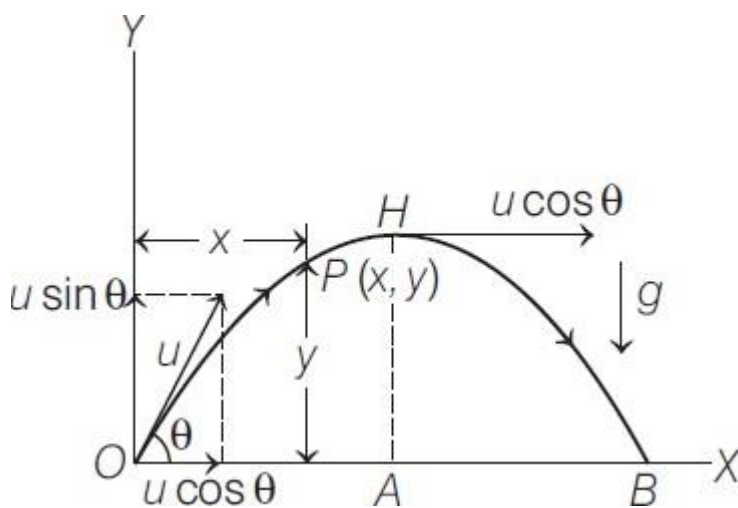
Q1. **The acceleration of the object in horizontal direction is** *

( ) (a) constant

( ) (b) decreasing

( ) (c) increasing

( ) (d) zero

Ans - d
    Feedback - As no force in horizontal direction so acceleration is zero.

Q2. **The vertical component of velocity at point H is** *

( ) (a) maximum

( ) (b) zero

(c) double to that at O

(d) equal to horizontal component

Ans - b
Feedback - vertical component of velocity is zero at highest point of projectile.

Q3. **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

Ans - d
Feedback - T = 2usinθ/g = 2 * 28 *sin30/9.8 = (2*28*1)/(2*9.8) = 2.9 s

Q4. **Range in projectile motion is maximum when θ is** *

a) 45 degree

b) 0 degree

c) 90 degree

d) None of these

Ans - a
Feedback – Range = u²sin2θ/g , range is maximum when sin2θ is maximum, which is at 45 degree.

LAWS OF MOTION

According to Newton's second law of motion, F=ma, where F is 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 act on a body for t seconds, the effect of force is given by impulse = F x t = change in linear momentum of body.
With the help of passage given above, chose the appropriate alternative for each of following questions:

Q5. A cricket ball of mass 150 g is moving with a velocity of 12 m/s and is hit by *
a bat so that the ball is turned back with a velocity of 20m/s. if duration on contact between the ball and bat is 0.01 s the impulse of force is

(a) 7.4 Ns

(b) 4.8 Ns

(c) 1.2 Ns

(d) 4.7 Ns

Q6. Average force exerted by the bat is **.** *

( ) (a) 480 N

( ) (b)120 N

( ) (c)1200 N

( ) (d)840 N

Q7. An impulsive force of 100 N acts on a body for 1 s. What is the change in its *
linear momentum

( ) (a) 10 Ns

( ) (b) 100 Ns

( ) (c) 1000 Ns

( ) (d) 1 Ns

Q8. A body of mass m collides against a wall with velocity v and rebounds with *
same speed. Its change of momentum is

( ) (a) 2mv

( ) (b) mv

( ) (c) -mv

( ) (d) zero

Assertion and Reasoning

Q9. **Assertion :** Horizontal range is same for angle of projection **θ**   and
(90 – **θ**).

Reason : Horizontal range is independent of angle of projection.

( ) (a) both assertion and reason are true and reason is the correct explanation of
       assertion.

( ) (b) both assertion and reason are true but reason is not the correct explanation of
       assertion.

(c) assertion is true but reason is false.

(d) both assertion and reason are false.

Ans - c
Feedback - assertion is correct but reason is false.

Q10. **Assertion :** impulsive force is large and acts for a short time.   *

Reason : finite change in momentum should be produced by the force.

(a) both assertion and reason are true and reason is the correct explanation of assertion.

(b) both assertion and reason are true but reason is not the correct explanation of assertion.

(c) assertion is true but reason is false.

(d) both assertion and reason are false.

Ans - a
Feedback - Both assertion and reason is correct.

Answer Key SEPTEMBER Month CBT Physics XI

Q No	Answer
1	d
2	b
3	d
4	a
5	b
6	a
7	b
8	a
9	c
10	a

Feedback:
1. Average score in this test is 5.28/10
2. Question 5 and 7 are scored by most of the students.
3. Question 4 is scored by least No of students.
4. Median marks scored by students is 5