

# MECHANICS

Q.N. 1 If  $x$  denotes displacement in time  $t$  and  $x = a \cos t$ , the acceleration is

[1]  $a \cos t$

[2]  $-a \cos t$

[3]  $a \sin t$

[4]  $-a \sin t$

## MECHANICS

Q.N. 2 A ball is projected vertically upward from the ground and its time of rise is 't'. In first  $t/5$  time ,it covers a distance of 2.7m. Find the height

[1] 12.5m

[2] 6m

[3] 25m

[4] 7.5m

## MECHANICS

Q.N. 3 Tripling the speed of a motor car multiplies the minimum distance needed for stopping by

[1] 9

[2] 3

[3] 2

[4] 1

## MECHANICS

Q.N. 4 If  $\vec{a} \cdot \vec{b} = \vec{a} \times \vec{b}$ , the angle between  $\vec{a}$  and  $\vec{b}$  is

[1]  $\pi/2$

[2]  $\pi/4$

[3]  $\pi$

[4]  $3\pi/5$

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Q.N. 5 The sum of two vectors A and B is at right angle to their difference, then

[1]  $A=B$

[2]  $A=2B$

[3]  $B=2A$

[4]  $A=0$

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Q.N. 6 The maximum height attained by the projectile is increased by 10% keeping angle constant. What is the increase in time of flight?

[1] 100%

[2] 20%

[3] 5%

[4] 10%

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Q.N. 7 A person can throw a ball to a maximum distance  $d$  over ground. What is the maximum height to which he can throw?

[1]  $d$

[2]  $d/2$

[3]  $4d$

[4]  $d/4$

## MECHANICS

Q.N. 8 A calculator weighing  $W$  rests on a rough plane with angle of friction  $\beta$ , the least force to move it along the plane is

[1]  $W\cos\beta$

[2]  $W\sin\beta$

[3]  $W\tan\beta$

[4]  $W\cot\beta$



# MECHANICS

Q.N. 9 If the momentum of a body is increased by 50%, its KE increases by:

- [1] 50%
- [2] 100%
- [3] 125%
- [4] 150%

## MECHANICS

Q.N. 10 A stone tied to one end of a string is whirled in horizontal circle so that length increases gradually. If  $T_1$  and  $T_2$  are the tensions in the string when its length be  $L$  and  $2L$ , then

[1]  $T_1 = 2T_2$

[2]  $T_1 = 4T_2$

[3]  $T_1 = 8T_2$

[4]  $T_1 = T_2/2$

# MECHANICS

Q.N. 11 Ratio of angular frequency of rotation of earth to hour hand of a clock is

[1] 1:2

[2] 2:1

[3] 1:1

[4] 1:12

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