Self Practice Paper (SPP)

A particle when projected in vertical plane moves along the fixed smooth surface with initial velocity 20 m/s at an angle of 60°, so that its normal reaction on the surface remains zero throughout the motion. Then the slope of the tangent to the surface at height 5 m from the point of projection A will be:



- **2.** A projectile is thrown with a speed v at an angle θ with the vertical. Its average velocity between the instants it crosses half the maximum height is
 - (1) v sin $\boldsymbol{\theta},$ horizontal and in the plane of projection
 - (2) v cos $\boldsymbol{\theta},$ horizontal and in the plane of projection
 - (3) $2v \sin \theta$, horizontal and perpendicular to the plane of projection
 - (4) $2v \cos \theta$, vertical and in the plane of projection.
- 3. A particle of mass 0.01 kg is projected with velocity v = 2 i m/s from point (x = 0, y = 20). After 2 second, its position coordinates are- (a = -10 ms²) (1) (4, 0) (2) 20, 4 (3) 0, 4 (4) 4, 20
- **4.** A ball is projected upwards from the top of a tower with a velocity of 50ms₋₁ making an angle of 30° with the horizontal. The height of the tower is 70m. After how much time from the instant of throwing will the ball reach the ground ?

(1) 2s	(2) 5 s	(3) 7 s	(4) 9 s

5. If 4 seconds be the time in which a projectile reaches a point P of its path and 5 seconds the time from P till it reaches the horizontal plane through the point of projection. The height of P above the horizontal plane will be - [g = 9.8 m/sec₂]

(1) 98 meters (2) 49 meters (3) 196 meters (4) 147 meters

