

Saraswati Education Society's
Saraswati College of Engineering, Kharghar, Navi Mumbai
First Year Engineering academic Year 2015-2016
Subject-Engineering Mechanics

Unit Test 2
SET-B

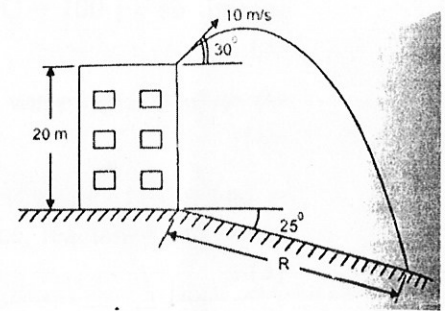
Marks-20
Duration- 1 Hour

Q 1 Attempt any TWO

A] A particle starts from rest and accelerates at a constant rate of 0.5 m/s^2 for some time. Thereafter it decelerates at a constant rate of 0.3 m/s^2 and comes to rest. If the particle was in motion for 2 minutes, find the maximum velocity acquired by it. Also find the total distance covered. (6 M)

B] A particle starts from rest from the position $(-5, -2, 4) \text{ m}$. Its acceleration is defined by $a = 3t \text{ i} + 12t^2 \text{ j} + 5k \text{ m/s}^2$. Find the particle's position, displacement, velocity and acceleration at $t = 2 \text{ sec}$. (6 M)

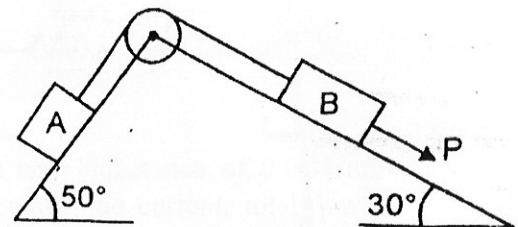
C] A ball is projected from the top of the tower which is 20m high with the projection velocity of 10m/sec at an angle of projection 30° as shown in figure. The ball falls on the inclined ground as shown in figure with angle 25° . Find the range R of the ground and the time of flight. (6 M)



D] Define angle of friction, Angle of repose, cone of friction. (6 M)

Q 2. Attempt any ONE

A]. Two blocks A and B of weights 500N and 750N respectively are connected by a string passing over a smooth pulley as shown in figure. Coefficient of static friction between block A and the surface is 0.4 and between block B and surface is 0.3. Find the force P applied on block parallel to plane for impending motion of block B down the plane. (8 M)



B]. The a-t graph is shown in the figure for a particle starting with velocity of 3m/sec from origin and travelling along the straight line path. draw the corresponding V-t curve and x-t Curve. (8 M)

