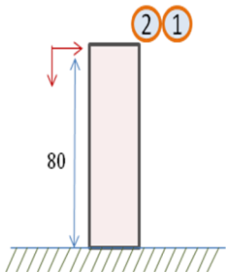
University of Palestine

Course No: *Eng1302*
Course Title: *Physics I*
Date: *7/1/2014*
No. of Questions: *(8)*
Time: *2:00 hours*
Using Calculator: *(Yes)*

Final Exam
2013/2014
Total Grade:60

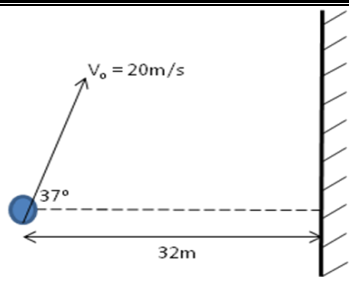
Instructor Name: *Dr. Loai Afana*
Student No.: _____
Student Name: _____
College Name: _____
Dep. / Specialist: _____
Using Dictionary: *(No)*

Question 1: (8/60)



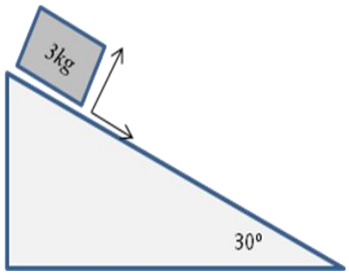
A ball is dropped downward from a building 80m high,
After 1s another ball is thrown vertically downward,
If the two balls reached the ground at the same time,
A) Find the initial velocity of the second ball.
B) Find the velocity of the first ball just before hits the ground.
Choose the coordinate system at the top of building, Assume (y) positive downward.

Question 2: (8/60)



1- Where will the ball hit the wall in Figure? And,
2- Find its direction (show Θ in Fig.)

Question 3: (10/60)



A 3kg block starts from rest at the top of 30^o incline, and slides a distance of 2m down the incline in 1.5s.
Draw a free-body diagram for the block, then Find:
(a) The acceleration of the block,
(b) The friction force acting on the block,
(c) The coefficient of kinetic friction between the block and the plane,
(d) The speed of the block after it has slid 2m.

Question 4: (6/60)

A force F = (6 i – 2 j) N, acts on a particle that undergoes a displacement Δr = (3 i + j) m.
Find:
A) The work done by the force on the particle.
b) The angle between F and r .

Question 5: (6/60)

A 0.600-kg particle has a speed of 2.00 m/s at point (A), and kinetic energy of 7.50 J at point (B).
Find:
(a) Its kinetic energy at (A)?
(b) Its speed at (B)?
(c) The total work done on the particle as it moves from (A) to (B)?

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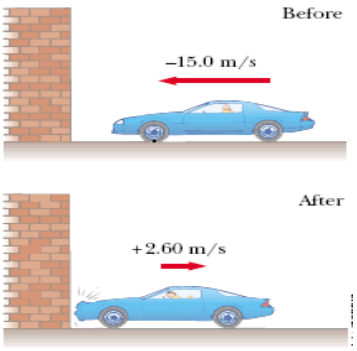
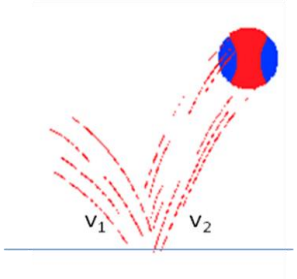
Question 6: (6/60)

A car of mass 1500 kg collides with a wall,
The initial and final velocities of the car are $v_i = -15m/s$, $v_f = 2.6m/s$.
If the collision lasts for 0.15s,
1- Find the impulse caused by the collision, and
2- The average force of the wall on the car.



Question 7: (8/60)

A *100g* ball is dropped from *2.00 m* above the ground.
It rebounds to a height of 1.50 m.
1- Find V_1 , V_2 in Fig.
2- What was the average force of the ball on the floor.
if the ball was in contact with the floor
for 1×10^{-2} s, assume that: $V_1 = -6.26m/s$, $V_2 = +5.24m/s$.



Question 8: (8/60)

A ball with a mass of 1.2 kg moving to the right at 2.0 m/s collides with a ball of mass 1.8 kg moving at 1.5 m/s to the left. If the collision is an elastic collision,
What are the velocities of the balls after the collision?

End of Questions