

Course No: *Eng1302*  
Course Title: *Physics I*  
Date: *02 /4/2015*  
No. of Questions: *(5)*  
Time: *1:30*  
Using Calculator: *(Yes)*

University of Palestine



Midterm Exam  
2014/2015  
Total Grade:20

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

**Question**

**(4/20)**

Suppose we write the position:  $x = \frac{1}{2} a^H t^F$  : where the position of a particle moving under uniform acceleration is some function of time and the acceleration.

Use the dimensional analysis to determine the power H and F.

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**Question 2:**

**(4/20)**

Find  $x$  which makes  $A$  and  $B$  perpendicular:

$$\vec{A} = 2\mathbf{i} + 3\mathbf{j} + x\mathbf{k}, \quad \vec{B} = -\mathbf{i} - 2\mathbf{j} + 2\mathbf{k},$$

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**Question 3:**

**(3/20)**

A particle moves along the  $x$  axis according to the equation:

$$x = 4 + 4t - 2t^2$$
 where ,  $x$  is in meters and  $t$  is in seconds.

Find At  $t = 2$  s : (a) The position of the particle, (b) Its velocity, and (c) Its acceleration.

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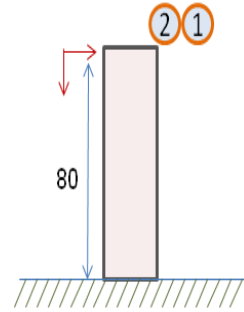
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**Question 4:**

**(4/20)**

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,

find the initial velocity of the second ball.  
*Choose the coordinate system at the top of building, Assume (y) positive downward.*



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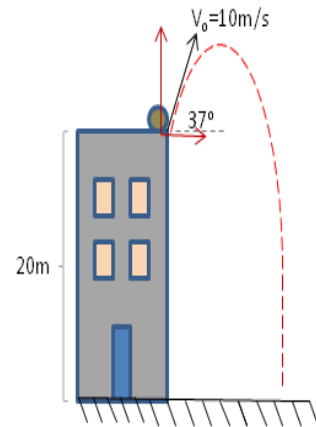
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**Question 5:**

**(5/20)**

An object is thrown upward at an angle of  $37^\circ$  to the horizontal with initial velocity of 10 m/s from the top of a 20m high building.

- 1- How long does it take to reach the ground?
- 2- Where does the object strike the ground?
- 3- What is the velocity and direction when an object hits the ground, (show by drawing.)



*End of Questions*