

Course No: *Eng1302*  
Course Title: *Physics I*  
Date: *25/3/2014*  
No. of Questions: *(5)*  
Time: *1:30 hours*  
Using Calculator: *(Yes)*

University of Palestine



Mid Exam  
2013/2014  
Total Grade:40

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Dep. / Specialist: \_\_\_\_\_  
Using Dictionary: *(No)*

**Question 1:**

**(7/40)**

A particle moving in circle of radius  $r$  with uniform velocity  $v$  ,  
Suppose that the acceleration ( $a$ ) of the particle is proportional to the  $r^n$  and  $v^m$ .  
Use the dimensional analysis to determine the power  $n$  and  $m$ .

**Question 2:**

**(7/40)**

if  $\vec{A} = 2\mathbf{i} + 4\mathbf{j} - 3\mathbf{k}$  ,  $\vec{B} = 5\mathbf{i} - \mathbf{j} + 6\mathbf{k}$ , find  $\vec{A} \times \vec{B}$

**Question 3:**

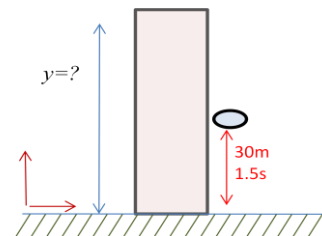
**(6/40)**

A car moves from a position of  $+4.0\text{m}$  to a position of  $-1.0\text{m}$  in  $2.0\text{sec}$ .  
The initial velocity of the car is  $-4.0\text{ m/s}$  and the final velocity is  $-1\text{ m/s}$ .  
(a) What is the displacement of the car?  
(b) What is the average velocity of the car?  
(c) What is the average acceleration of the car?

**Question 4:**

**(10/40)**

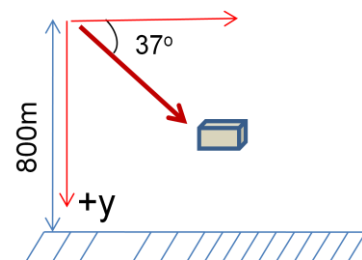
A freely falling object requires  $1.5\text{s}$  to travel the last  $30\text{m}$  before it hits the ground.  
From what height above the ground did it drop?  
*Choose the coordinate system at the bottom of building, Assume  $(y)$  positive upward.*



**Question 5:**

**(10/40)**

A plane is traveling at  $v_0$  and releases a bag at an angle of  $37^\circ$  with horizontal from a height of  $800\text{m}$  which reach the ground after  $5\text{s}$ ,  
Find:  
1- Initial velocity of the plane.  
2- Where does the bag strike the ground?  
3- Speed and direction of the bag just before strike the ground, (show  $\Theta$  in Fig.)



*End of Questions*