University of Palestine

Course Title: *Physics I*
Date: *4/11 / 2012*
No. of Questions: *(4)*
Time: *1.5 h*
Using Calculator: *(Yes)*

Total Grade: 20

Instructor: *Dr. Loai Afana*
Student No.: _____
Student Name: _____
Using Dictionary (No)

Q. (1):

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

Q. (2):

If: $\vec{A} = 2i - j + 2k, \quad \vec{B} = 3i - 4j$

Find the angle between the two vectors

Q. (3):

A Particle movies along the x-axis. According to the expression:

$$x(t) = -4t + 2t^2$$

1- Determine the displacement of the particle in the time interval: t=0s to t=1s
2- Calculate the average velocity in the time interval t=0 to t=1
3- Find the instantaneous velocity of the particle at t=2.5 second

---

Q. (4):

The height of Balloon above the ground is given by: **$h = (3).t^3$** (h: meters, t: seconds).
After 2s, the Balloon releases a bag,. Find:

a) The maximum height the bag can reach.
b) How long after its release the bag needs to reach the ground.

Note: *Choose reference frame at the ground, With Upward (Y) being positive.*
