Course No: ENG1302
Course Title: *Physics I*
Date: *28 /7 / 2013*
No. of Questions: *(5)*
Time: *1.30 h*
Using Calculator: *(Yes)*

University of Palestine

Total Grade: 40

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

Q. (1) *(6/40)*

Show that the expression $x = vt + 1/2\ at^2$ is dimensionally correct.

Q. (2) *(6/40)*

Find the angle between the two vectors:

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

Q. (3) *(6/40)*

A ball is dropped from rest at 240m height above the ground.
At the same moment the first ball is released, another ball is thrown vertically upward from the ground with initial velocity 40m/s .
(a) Where they will be meet? (b) When they will be meet?

Note: Choose the coordinate system at the bottom of building, Assume (y) positive upward.

Q. (4) *(12/40)*

A stone is thrown from the top of 45m high building upward at an angle of *30.0°* to the horizontal with an initial speed of 20.0 m/s. Find:
(A) How long does it take the stone to reach the ground?
(B) What is the speed of the stone at t = 3s?
(C) Determine the location of stone at t =2s.
(D) What is the Angle when the stone hits the ground, show it by drawing.
(E) Prove that Trajectory of a projectile is a parabola.

Note: Choose the coordinate system at the bottom of building, Assume (y) positive upward.

Q. (5) *(10/40)*

A 5.00-kg object placed on a frictionless, horizontal table is connected to a string that passes over a pulley and then is fastened to a hanging 9.00-kg object, as in Figure.
(a) Draw free-body diagrams of both objects, and show the direction of the motion.
(b)Find the acceleration of the two objects, and (c) the tension in the string.