

Course No: RNG1302
Course Title: Physics1
Date: 16/08/2011
No. of Questions: (6)
Time: 2hours
Using Calculator (No)

University of Palestine



Final term Exam
3^{ed} 2010/2011
Total Grade:

Instructor Name: _____
Student No.: _____
Student Name: _____
College Name: _____
Dep. / Specialist: _____
Using Dictionary (No)

Question One:

1) Consider the three displacement vectors $\mathbf{A} = (3\mathbf{i} - 3\mathbf{j})$ m, $\mathbf{B} = (\mathbf{i} - 4\mathbf{j})$ m, $\mathbf{C} = (-2\mathbf{i} + 5\mathbf{j})$ m. find (a) the magnitude and direction of the vector $\mathbf{D} = \mathbf{A} + \mathbf{B} + \mathbf{C}$, (b) the magnitude and direction of $\mathbf{E} = \mathbf{A} - \mathbf{B} - \mathbf{C}$.

Question Two:

A Stone is thrown vertically with initial speed $V_{0y} = 20$ m/sec. Find the maximum height which can be reached by the stone and the time taken for that. Write the relation which can be used to find the Velocity V_y At any time.

Question Three:

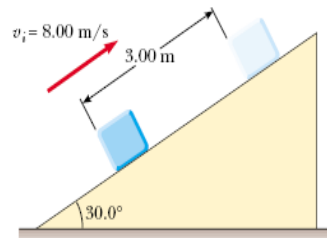
An automobile whose speed is increasing at a rate of 0.6 m/s^2 travels along a circular road of radius 20 m. When the instantaneous speed of the automobile is 4m/s, find (a) the tangential acceleration, (b) the radial acceleration, and (c) the magnitude of the total acceleration.

Question Four:

A single conservative force $F_x = (2x^2 + 4x) \text{ N}$ acts on a 5kg particle, where x is in m. As the particle moves along the x axis from $x = 2\text{m}$ to $x = 6\text{m}$, calculate (a) the work done by this force, (b) the change in the potential energy of the particle, (c) its kinetic energy at $x = 6$ m if its speed at $x = 2\text{m}$ is 3 m/s.

Question Five:

A 5kg block is set into motion up an inclined plane as in Figure with an initial speed of 8 m/s. The block comes to rest after travelling 3 m along the plane, as shown in the diagram. The plane is inclined at an angle of 30° to the horizontal. (a) Determine the change in kinetic energy. (b) Determine the change in potential energy. (c) Determine the frictional force on the block. (d) What is the coefficient of kinetic friction?



Question Six:

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