

Sultan Qaboos University
Physics Department, College of Science
Physics 2107: Physics for Engineering I Spring Semester 2007 - Test I

Monday 5th March 2007

Time: 5:00 – 6:00 pm

ID No.:	1	2	3	Total
Name:				

Full Mark:40 points	Please check that your examination paper has 3 Questions Do not write your section number
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- 1) A particle moving in an open area has components of velocity $v_x = 2.6$ m/s and $v_y = -1.8$ m/s at $t_1 = 10.0$ s. For the time interval from $t_1 = 10.0$ s to $t_2 = 20.0$ s, the average acceleration of the particle has magnitude 0.45 m/s² and direction 31.0° measured from the +x-axis. At $t_2 = 20.0$ s:

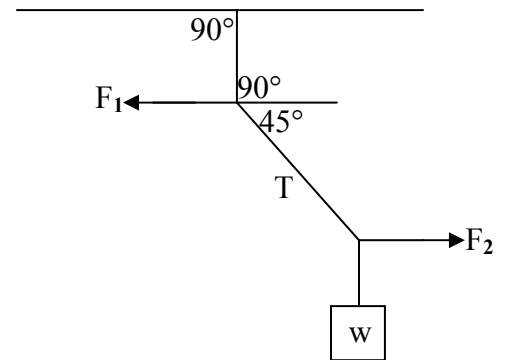
- a) What are the x- and y-components of the particle's velocity?
- b) What are the magnitude and direction of the particle's velocity?

(12 points)

- 2) Two balls A and B are thrown from the top of a vertical cliff. Ball A is thrown horizontally reaching the ground in 3.5 s. Ball B is thrown with an initial velocity of 25 m/s at angle of 30° above the horizontal.
- a) What is the height of the cliff?
 - b) How far from the base of the cliff will B hit the ground?
 - c) What is the initial velocity of ball A if it hits the same point as ball B on the ground?
- (14 points)**

- 3) a) In the figure below, the weight w is 60 N and the system is in equilibrium.
- what is the value of the tension T ?
 - Find the horizontal forces F_1 and F_2

(7 points)



- b) Two blocks A and B each with a weight of 60 N, are held in place on a frictionless incline of an angle 37° as show in the figure.
- Find the tension in the rope connecting the blocks.
 - Find the tension in the rope connecting block A to the wall.

(7 points)

