Prince Sultan University

Department of Mathematics & Physics

PHY 105- General Physics 1

First Exam

First Semester, Term 151

Tuesday 13/10/2015

Examination Time : 60 minutes

Name …….

Student I.D. …….

Section: …….

Use g = -9.8 m/s^2

Important Instructions:

1. You can use a scientific calculator that does not have programming or graphing capabilities.

*2. You may **NOT** borrow a **calculator** from anyone.*

*3. Do not use **RED pen**.*

*4. This is a closed books and notes exam. Do **NOT** use notes or textbooks.*

*5. There should be **NO** talking during the examination.*

*6. Your will be **expelled** immediately from the exam if your mobile phone is seen or heard.*

*7. Any signs of **cheating** may cause you being expelled from the exam.*

*8. This examination has **2 parts**. **Part 1** has **9 multiple choice questions**, each question worth **1 point**. **Part 2** has **two workout problems** each problem worth **3 points**.*

Make sure your paper has all the questions and problems.

Part 1: 9 Multiple Choice Questions (1 mark each)

1) Using the appropriate number of significant figures, calculate $2.094 \times 3.81 + 6.347$

a) 14.32514 b) 14.327 c) 14.33 d) 14.3

2) Given that **1 mile = 1.61 kilometer** and that **1 hour = 60 minutes**, calculate the speed of a car in units of **kilometer/hour** when it is moving at a speed of 1.2 **mile/minute**?

a) 44.72 b) 115.92 c) 0.0322 d) 0.012

3) If ***a*** is acceleration, ***v*** is velocity, ***x*** is distance, which of the following has dimension of time?

a) ***v/a*** b) ***va*** c) ***vx*** d) ***v/x***

4) Suppose that an object moving in 2D travels from one point to another. Make a comparison between the displacement and the distance traveled.

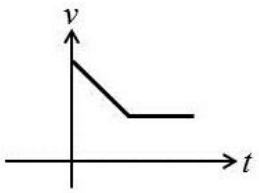
a) The displacement magnitude is greater than or equal to the distance traveled.

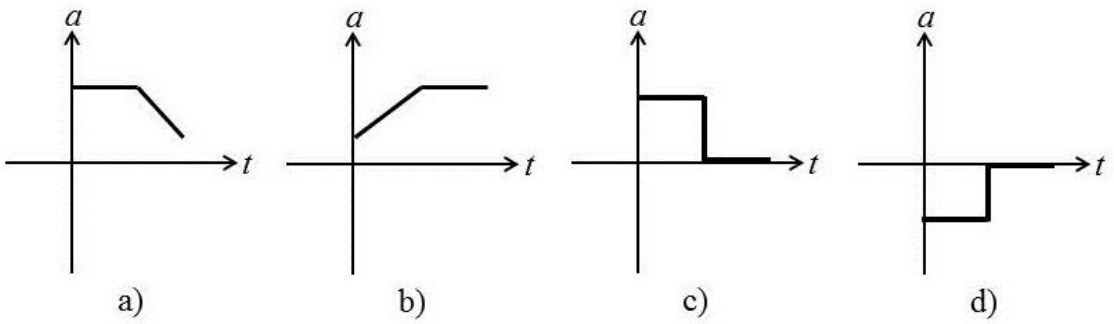
b) The displacement magnitude is less than or equal to the distance traveled.

c) The displacement magnitude is always equal to the distance traveled.

d) The displacement magnitude is greater than, smaller than, or equal to the distance traveled.

5) Which of the following four a-t graphs corresponds for the given v-t graph?





6) If a bike accelerates uniformly from a speed of 4 m/s to a speed of 12 m/s over a distance of 32 m, then the average acceleration of the bike is:

a) 8 m/s^2 b) -8 m/s^2 c) 2 m/s^2 d) -2 m/s^2

7) If a stone is dropped into a deep well and is heard to hit the water 3.4 s after being dropped, then the depth of the well is

a) 56.6 m b) 16.7 m c) 226.6 m d) 66.6 m

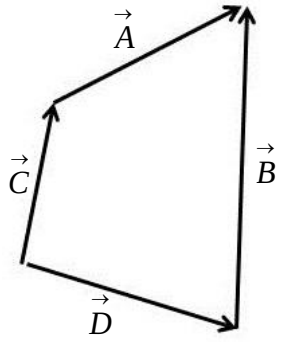
8) The graph shows four vectors $\vec{A}, \vec{B}, \vec{C}$ and $\vec{D}$. Which of the following four statements is true concerning these four vectors?

a) $\vec{A}+\vec{B}=\vec{C}+\vec{D}$

b) $\vec{A}+\vec{C}=\vec{B}+\vec{D}$

c) $\vec{A}+\vec{D}=\vec{C}+\vec{B}$

d) $\vec{A}=\vec{B}+\vec{C}+\vec{D}$



9) When an object travels from the point (-5m,14m) to the point (25m,-4m) in 6 seconds, then its average velocity is:

a) $30\hat{x}-18\hat{y}\ \ m/s$

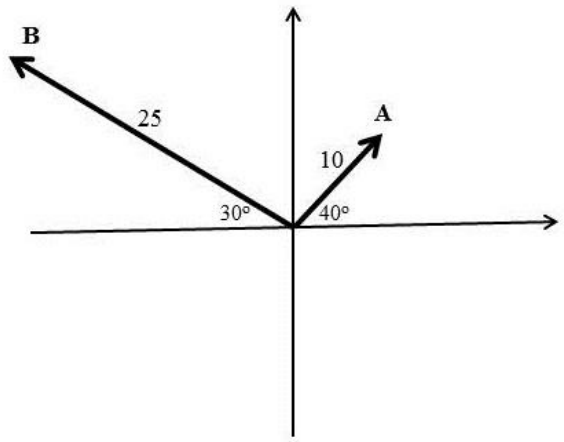
b) $18\hat{x}-30\hat{y}\ \ m/s$

c) $3\hat{x}-5\hat{y}\ \ m/s$

d) $5\hat{x}-3\hat{y}\ \ m/s$

Part 2: Solve the following two problems in the space provided in between showing all your steps (3 marks each)

Problem 1: If $\vec{C} = \vec{A} + \vec{B}$ where $\vec{A}$ and $\vec{B}$ are the two vectors shown in the graph. Use the algebraic method to calculate the magnitude and direction of vector $\vec{C}$



Problem 2: A stone is thrown with a speed of 50 m/s at an angle of 60^{o} above horizontal from the edge of a cliff above the ocean. If the stone hits the water at a point 300 m away from the base of the cliff, find

a) How long does the stone take to hit the water surface?

b) What is the height of the cliff?

c) With which angle will the stone hit the water surface?

Scratch paper