

Phys 201 First Midterm Test
February 19, 2008

Professor: Dr. Edward J. Brash

Rules and Regulations:

1. Calculators, with memory cleared, are permitted.
2. You may bring as many pencils, pens, and erasers with you as you like.
3. You are allowed one 8.5"x11" equation sheet, with equations only.
4. For the acceleration due to gravity at the earth's surface, use $g=9.80 \text{ m/s}^2$.
5. There are four questions on the test. They are all of equal value (10 marks), but not necessarily of equal difficulty. Make every effort to attempt ALL questions !!!
6. You should complete your solutions to the test on the test paper itself. Use the back of the test paper if necessary.
7. Your solutions to the problems should, in general, contain a combination of diagrams, equations, and English word sentences explaining your strategy and thought process.

STUDENT NAME: _____

STUDENT ID NUMBER: _____

SIGNATURE: _____

1. A car accelerates at a rate of 4.50m/s^2 , from rest, to a final velocity of 35.0m/s . At this exact moment in time, the driver notices a police car at the side of the road, and IMMEDIATELY decelerates at a constant (but different!) rate to 20.0m/s . The TOTAL distance traveled by the care from start to finish is 160m .
 - a) What is the distance traveled by the car during the initial acceleration?
 - b) What is the acceleration of the car during the “deceleration” phase?

2. A batter in baseball pops a ball straight up.

- a) If the ball returns to the height from which it was hit 4.50 s later, what was its initial speed?
- b) At what time does the ball reach its maximum height?
- c) Find the maximum height of the ball, as measured from the point where it was hit.

3. A passenger walks from one side of a ferry to the other as it approaches a dock. If the passenger's velocity is 1.50 m/s due north relative to the ferry, and 4.50 m/s at an angle of 30.0° west of north relative to the water, what are the direction and magnitude of the ferry's velocity relative to the water?

4. A golfer tees off on level ground, giving the ball an initial speed of 42.0 m/s and an initial direction of 35.0° above the horizontal.

a) How far from the golfer does the ball land?

b) Suppose that the next golfer in the group hits the ball with the same initial speed, but at an angle above the horizontal that is greater than 45° . If the second ball travels the same horizontal distance as the first ball, what was the initial direction of motion? Explain your reasoning.