

PHY105 Quiz 1

Instructor: Mohammed Alsenani – malsenani@psu.edu.sa
23/01/2025

Name		
Student ID		
Section (circle yours)	476: S/T/Th 08:00 AM	488: S/T/Th 01:00 PM

Rules:

- You may use a scientific calculator that does not have programming or graphing capabilities. NO borrowing calculators.
- NO talking or looking around during the examination.
- NO mobile phones. If your mobile is seen or heard, your exam will be taken immediately.
- Show all your work when required and be organized.**
- Assume $g = 9.81 \text{ m/s}^2$ unless the problem says otherwise.
- Unless the problem says otherwise, ignore air-resistance.
- Include units in your final answer, if applicable.

- Q1. [1 point] Which of the equations below is **dimensionally consistent**? Assume that t , x , v , and a represent time, position, velocity, and acceleration, respectively.
- a) $v = 2at^2$
 - b) $a = t/x^2$
 - c) $x = avt$
 - d) $t = \sqrt{2x/a}$
- Q2. [1 point] A new car engine (2025 Porsche 911 Carrera) has 388 horsepower of power, but you only have *donkeys* at home for reference! If 1 “donkeypower” equals 250 Watts, and 1 horsepower equals 750 Watts, **convert the power of the car to donkeypower (dp)**.
- a) 0.00207 dp
 - b) 129 dp
 - c) 1160 dp
 - d) 7.28×10^7 dp
- Q3. [3 points] A person on a bicycle moves at a constant velocity of 3.0 m/s for 6.0 seconds. The person then accelerates at a rate of 2.25 m/s² for 4.0 seconds.
- a) [1 point] Calculate the person’s **position** after the first 6.0 seconds.

 - b) [1 point] Calculate the person’s **velocity** after they finish accelerating.

 - c) [1 point] Next, the person applies the brakes and uniformly decelerates until they stop. In this time, the person moved 8.0 m. Find the magnitude of his **deceleration**.