

Physics:

1st Semester Exam: Review Material

Basic Outline:

- *50 Multiple Choice Questions
 - Scantron
 - 30 Concept Questions
 - 20 Mathematics Questions
- 1 Page Free Response

Basic Ideas:

- Units for Variables
- Definitions of Key Variables or Terms
- Recognition of key theorems or formulas

Mathematical Toolkit (6 Questions):

- Sig Figs
- Trig
- Vectors
 - Adding and Subtracting Vectors Visually
 - Converting Polar to Rectangular Coordinates
 - Converting Rectangular to Polar Coordinates
 - Components

Kinematics in One-Dimension (9 Questions):

- Vectors vs. Scalars
 - Distance vs. Displacement
 - Speed vs. Velocity
- Kinematic Equations
- Graphical Analysis
 - Reading/Interpreting a Position vs. Time Graph
 - Slope of a Position vs. Time Graph
 - Reading/Interpreting a Velocity vs. Time Graph
 - Slope of a Velocity vs. Time Graph
- Gravity and Free Fall

Kinematics in Two-Dimensions (Projectiles) (6 Questions):

- Definition of Projectile Motion
- Assumptions of Projectile Motion
 - Only acceleration due to gravity
 - No acceleration in the x-direction
 - Constant velocity in the x-direction
 - Time is the same whether measured in the x- or y-direction
- $\frac{1}{2}$ Projectile
 - Initial y-velocity (v_{oy}) is 0 m/s
 - The only initial velocity is in the x-direction (v_x)
- Full Projectile
 - y-velocity is zero at the highest point of a full projectile

Forces (10 Questions):

- Mass and Inertia
- Newton's Three Laws of Motion
- Equilibrium vs. Non-Equilibrium
- Finding the ΣF
- Mass vs. Weight
- Forces Studied
 - Normal Force
 - Force of Gravity
 - Force of Friction (Static and Kinetic)
 - Be able to differentiate between the two

Work, Power and Energy (7 Questions):

- Work
 - Force vs. Displacement Graphs
- Power
- Energy
 - Kinetic and Potential Energy
 - Conservation of Energy

Impulse, Momentum, and Collisions (7 Questions):

- Impulse
- Momentum
- Impulse Momentum Theory
- Conservation of Momentum
- Collisions
 - Elastic, Inelastic, and Total Inelastic

***Other General Questions (5)**