

## PHYSICI 101 Exam 1 Review Sheet

Please note that the exam may contain questions not on this sheet, and that not all of these questions will necessarily appear on the exam. Remember to review relevant labs and homework.

### *Prologue:*

1. Differentiate science from non-science.
2. Determine whether a concept can be tested in a scientific manner.
3. What is an hypothesis?
4. What makes the scientific method scientific?
5. How is technology different from science?
6. Demonstrate familiarity with the metric system and common prefixes.
7. Be able to convert from English units to metric units with provided conversion factors.
8. Determine whether measurements are precise and/or accurate and whether an error affects precision or accuracy.
9. Be able to construct a good graph and determine its relationship.

### *Chapter 1:*

10. Determine which object would have a greater amount of inertia.
11. Recall the correct definition for mass.
12. Describe and recognize the difference between mass and weight.
13. Identify situations for mechanical equilibrium.
14. What is the primary difference between speed and velocity?
15. What is the complete definition for acceleration? Be able to apply this definition to different situations and determine whether there is acceleration.
16. What is the acceleration due to Earth's gravity? Is this number different for different masses?
17. Be able to determine the motion shown by a graph.

### *Chapter 2:*

18. Recall each of Newton's Laws; be able to describe them in your own words; be able to apply them to a system.
19. Be able discuss or recognize how acceleration changes before and after reaching terminal velocity.
20. Be able to add vectors, including those that require use of the Pythagorean Theorem.

### *Chapter 3:*

21. Determine which object would have a greater amount of momentum.
22. Relate momentum and changes in momentum to force of impact. What causes a large impact force? What can be done to decrease the impact force?
23. Use conservation of momentum and conservation of energy to solve problems.
24. Recall the difference between elastic and inelastic collisions, and determine the final velocity of a system.
25. Angular momentum depends on what three quantities? What happens when the radius of a spinning object decreases?

26. Recall the definitions for energy, work, and power.
27. Be able to compare and contrast energy, work, and power.
28. Be able to determine whether Work has been done on an object.
29. Define mechanical energy, gravitational potential energy, and kinetic energy.
30. Determine the type of energy for a given system.
31. What is a kWh?
32. What are machines able to do? Look at your homework question on this.
33. Relate torque to work.
34. Recognize and describe renewable energy sources.

#### *Chapter 4: Gravity*

35. Compare and contrast the descriptions for gravity.
36. Explain the implications of an inverse square law.
37. According to Newton's Law of Gravity, does one object attract the other or do both objects attract each other?
38. What causes astronauts to appear weightless?
39. Be able to list the affects of gravity in the universe.
40. Differentiate between spring and neap tides.
41. Recall the alignment of the Sun, Earth, and Moon for Spring tides and for Neap tides.
42. What causes the curved path of a projectile? Review answers to the baseball example for projectile motion and review the related lab.
43. Be able to calculate how long a projectile will be in flight, and the range of the projectile.
44. What is a centripetal force; in what direction does it act?
45. What are some sources of centripetal force?
46. What causes an elliptical orbit? What sustains an elliptical orbit?
47. Do the planets in our solar system orbit at a constant speed? Explain.

*"You can do anything if you work hard."*