Conceptual Physics Practice Final

Part 1: Matching

_____ 1. Period   A) Watts

_____ 2. Momentum   B) Seconds

_____ 3. Power   C) Ohms

_____ 4. Resistance   D) $kg \cdot \frac{m}{s}$

_____ 5. Force   E) Newtons

Part II: True and False.

Write T or F next to the statement. _Correct the False._

_____ 6. Because the moon has less gravity than earth, objects there have a higher volume than on earth.

_____ 7. Potential energy is the energy of motion.

_____ 8. Objects that are good conductors are good at transferring heat.

_____ 9. The frequency of a wave is the time it takes to complete one full cycle and is measured in seconds.

_____ 10. A mirror causes diffuse reflections because of its extremely smooth surface.

Part III: Multiple Choice

11. My brain thinks light always:

A) Bends around obstacles   B) moves in a straight line   C) Refracts   D) Slows down

12. In the equation $K = 273 + C$, C stands for:

A) Calories   B) Celsius   C) specific heat   D) 1000 calories

13. The momentum of a 2.5 kg object travelling at 4 m/s is:

A) 10 $kg \cdot \frac{m}{s}$ B) 0.01 $kg \cdot \frac{m}{s}$ C) 0.01 $kg \cdot \frac{m}{s}$ D) 40 $kg \cdot \frac{m}{s}$

14. Which of the following is **not** a possible temperature

A) 273 °C   B) 2000 °F   C) -200 °C   D) - 40 K

15. Velocity is speed:

A) with direction   B) with acceleration   C) racer   D) over time

Part IV: Fill-in

16. A resistor that changes its resistance as temperature changes is called a

_____.

17. Heaters are placed near the floor of rooms because they transfer heat using

_____.

18. _____ friction is the friction that prevents motion.

19. An object that is changing direction, speeding up, or slowing down is
_____.

20. If I exert a force over a distance I am doing _____.

Part V: Short Answer

21. What is newton's 3rd law? Give an example.

22. Why does a guitar string have a higher pitch when you tighten the string? Explain in terms of an equation.

23. Why do cities near lakes or oceans not experience very hot summers or very cold winters?

Part VI: Problems

24. A large rock with a mass of 700 kg is rolling down a mountain with a speed of 10 m/s. If this rock crashes into my car that has a mass of 2,000 kg and they begin to move together, how fast will they move?

25. The high temperature today is 81 °F. What is this temperature in Celsius and Kelvin?

26. What is the voltage drop over resistor B in the following circuit?
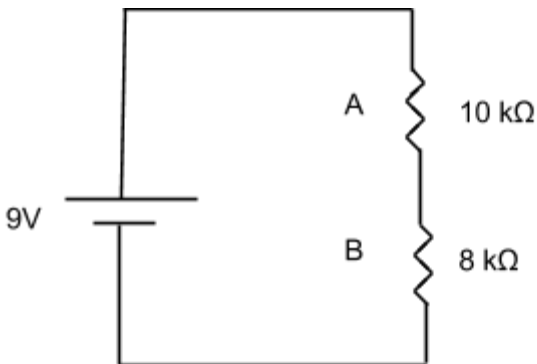
27. A penny with a mass of 0.01 kg is held at the top of a tall building. If the penny has a potential energy of 35 Joules:

a) How tall is the building

b) Once dropped, how fast will the penny be moving the instant it hits the ground?