

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

## Chapter 27 Concept Review

### CONCEPTUAL PHYSICS: WAVES

**Directions:** Answer the following questions using your notes and textbook

1. Up until Newton and beyond, most philosophers thought light consisted of \_\_\_\_\_
2. Einstein published theory explaining photoelectric effect in 1905. Said light consists of particles (later called \_\_\_\_\_)
3. Scientist now agree that light has a dual nature, part \_\_\_\_\_ and part \_\_\_\_\_.
4. Calculated the speed of light to be 299,920 \_\_\_/\_\_\_ (which we rounded to 300,000 \_\_\_/\_\_\_) He received Nobel prize for this
5. Light takes \_\_\_ minutes to travel from Sun to Earth
6. Light is energy emitted by accelerating \_\_\_\_\_ charges
  - a. The energy travels in a wave that is partly electric and partly \_\_\_\_\_
  - b. This is called an \_\_\_\_\_ wave
7. The range of electromagnetic waves shown in electromagnetic \_\_\_\_\_
8. Light is energy carried in an electromagnetic wave that is generated by \_\_\_\_\_ electric charges.
9. Visible light sets up \_\_\_\_\_ in atoms that produce a chain of absorptions and reemissions that pass the light energy through the material and out the other side
10. Light travels at different \_\_\_\_\_ in different materials
11. Glass blocks both \_\_\_\_\_ and \_\_\_\_\_, but is transparent to visible light
12. Ultraviolet light creates \_\_\_\_\_ in glass and atoms hold onto energy for quite a long time and gives up energy as heat
13. Infrared vibrate not only the electrons, but also the entire structure of the glass. This vibration increases internal energy and makes it \_\_\_\_\_
14. Most materials \_\_\_\_\_ light without reemission and allow no light through them (they are opaque)

16. Our atmosphere is \_\_\_\_\_ to visible light and some infrared, but almost opaque to high-frequency ultraviolet waves

17. A thin beam of light is called a \_\_\_\_\_

18. Sharp \_\_\_\_\_ are produced by small light source nearby or by larger source farther away

19. Most shadows are somewhat \_\_\_\_\_

a. Total shadow called the \_\_\_\_\_

b. partial shadow called \_\_\_\_\_

20. Can be seen during \_\_\_\_\_ eclipse (when moon passes between Earth and Sun)

21. \_\_\_\_\_ eclipse- when Earth passes between Sun and the moon.

22. Transverse waves have vibrations back and forth in one direction (wave said to be \_\_\_\_\_)

23. Light that reflects from nonmetallic surfaces such as glass, water, or roads, vibrates mainly in \_\_\_\_\_ of the reflecting surfaces

24. Vision in three dimensions depends on fact that both eyes give impressions simultaneously, each eye viewing a scene from slightly different \_\_\_\_\_

25. A pair of photographs or movie frames taken a short \_\_\_\_\_ apart (about average eye spacing) can be seen in 3-D

a. When left eye sees \_\_\_\_\_ the left view and right eye sees \_\_\_\_\_ the right view

b. Accomplish this with by projecting the \_\_\_\_\_ of views through polarization filters onto a screen.