**The Nature Of Light** (p. 552 – 558)

**I. Waves & Particles**

**1. Light behaves sometimes like a wave and sometimes like a stream of particles.**

Circle One : True False

**2. What happens when a beam of light passes through two narrow openings?**

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**3. What produced the striped pattern in Thomas Young’s experiment?**

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**4. What type of waves are light waves?**

Circle One : Electromagnetic Longitudinal

**5. Define the term photons.**

Photons –

**6. Describe the photoelectric effect.** *(i.e., electrons knocked off metal by light particles)*

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**7. Depending on the situation, light can be viewed as a wave or a particle.**

Circle One : True False

**8. Light energy is proportional to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of light.**

**9. Nothing is faster than the speed of light.**

Circle One : True False

**10. Rate the speed of light in the following substances.** *[1 = Fastest; 3 = Slowest]*

1. \_\_\_\_\_ - Gases 2. \_\_\_\_\_ - Liquids 3. \_\_\_\_\_ - Solids

**11. Define the term light intensity.**

Light Intensity –

**12. Intensity of light decreases as distance from the light source decreases.**

Circle One : True False

**II. The Electromagnetic Spectrum**

**1. Fill in the types of electromagnetic waves according to frequency.**

*[1 = lowest frequency; 7 = highest frequency]*

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**2. Circle the letter of each way that radio waves are used.**

a. Holograms

b. Radar

c. Radio Technology

d. Television Technology

**3. What are two uses of microwaves?**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**4. Circle the letter of each way that infrared waves are used.**

a. Heat Lamps

b. Long-range remote sensors

c. Thermograms (heat images)

d. Computer Mouse

**5.** **What are the colors present in the visible light spectrum?**

R.\_\_\_\_\_\_\_\_ O.\_\_\_\_\_\_\_\_Y.\_\_\_\_\_\_\_\_ G.\_\_\_\_\_\_\_\_ B.\_\_\_\_\_\_\_\_ I.\_\_\_\_\_\_\_\_ V.\_\_\_\_\_\_\_\_

**6.** **Which statement is false concerning ultraviolet rays?** (Not in the book.)

a. Ultraviolet light helps your skin produce Vitamin C.

b. Microorganisms on food and medical supplies are killed using ultraviolet radiation.

c. Certain materials will fluoresce under ultraviolet lighting.

d. Only a fool would intentionally get sunburned.

**7.** **List three ways in which x-rays are useful.** *(Not in the book.)*

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8. How are x-rays and gamma rays used in radiation therapy?**

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**9. What are three other uses of gamma rays?** *(Not in the book.)*

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_