**Sound** (p. 543 – 551)

**I. Properties Of Sound**

**1. Define the term sound waves.**

Sound Waves –

**2.** **What produces all types of sound?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. What is the speed of sound in air at room temperature?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meters / second

**4. Sound travels through all mediums at the same rate.**

Circle One : True False

**5. Differentiate between sound loudness and sound intensity.**

Loudness : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Intensity : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**6.** **Why can a quiet whisper not be heard on the opposite side of a room?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**7.** **How does increasing sound wave amplitude relate to :**

Intensity = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Loudness = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**8. The term “loud” can be interpreted differently by people.**

Circle One : True False

**9.** **Define the term decibel.**

Decibel –

**10. What do the following decibel levels represent?**

0 dB = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 120 dB = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**11. A higher pitch corresponds with a higher frequency (*something vibrating rapidly*).**

Circle One : True False

**12. What is the frequency range of human hearing?**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hz to \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Hz

**13. Any sound that has a frequency below the range of human hearing is called**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, whereas any sound that has a frequency above the**

**range of hearing is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**II. Musical Instruments**

**1. All musical instruments use standing waves to produce sound.**

Circle One : True False

**2.** **Differentiate between fundamental frequency and natural frequency.**

Fundamental : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Natural : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3. Sound on a guitar is loudest when forced vibrations vibrate at the fundamental frequency.**

Circle One : True False

**4. Define the term resonance.**

Resonance –

**5. What are four factors that affect the natural frequency of any object?**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**III. Hearing & The Ear**

**1. Complete the flowchart showing how sound waves are interpreted.**

The outer ear gathers \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves.

↓

The middle ear \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the waves.

↓

The inner ear converts sound waves into \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and are sent to the brain.

↓

The brain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and interprets nerve impulses.

**IV. Ultrasound & Sonar**

**1. Define the term sonogram.**

Sonogram –

**2. Medically, what are three uses of ultrasonic waves?** *(Not in the book.)*

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

**3. Define the term sonar.**

Sonar –

**4. What are three uses of sonar?** *(Not in the book.)*

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