**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. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_