15. Sound

- Vibrating body produces sound.
- Vibration motion– to-and-fro or back-and-forth or up-and-down motion of a body.
- Sound is a form of energy that is produced by producing vibration in an object.
- Sound cannot move through vacuum; sound waves are longitudinal waves.

- Sound requires **material medium** for propagation.
- Sound can travel through solid, liquid or gas.
- Sound cannot travel through vacuum.
- No sound can be heard in outer spaces.

- Sound is a form of energy that is produced by producing vibrations in an object.
- Sound cannot move through vacuum.
- Sound is a wave that requires a medium for its propagation. The medium particles vibrate only to and fro. They do not move with the sound.

- **Frequency –** Number of oscillations per second. It is measured in hertz(Hz).
- **Loudness of sound**
    - It is measured in decibel (dB).
    - It depends on amplitude.
    - Higher **amplitude –** louder sound
    - Pitch or shrillness depends on frequency.
    - Higher **frequency –** higher pitch

- **Audible sound –** Human ear can hear sounds having frequency in the range of 20-20,000 Hz.

- **Musical instruments and their vibrating parts**

Musical instrument	Vibrating part producing sound
Veena	Stretched string
Tabla	Stretched membrane

Flute	Air column

- In humans, sound is produced by **voice box** or **larynx**.
- When the lungs force air through the slit, the vocal cord vibrates and produce sound.
- The muscles attached to the vocal cords can make the cords tight or loose to produce different types of sounds.
- Different people have different vocal chords. Due to this reason, we all have a different voice quality.