Chapter – 13

Sound

- **Sound**: A kind of sensation received by our ears and perceived by our brain. Sound is produced by vibrating objects.
- **Musical Sound:** The sound which produce a pleasing effect on the ear.
- **Noise:** The sounds which produce a jarring or unpleasant effect.
- **Types of Sound:**
  (i) **Audible Sound:** Vibrations whose frequency lies between 20 Hz to 20,000 Hz (20 kHz)
  (ii) **Inaudible Sound:** The sounds having frequencies above 20,000 Hz and below 20 Hz cannot be heard by the normal human ear.
- In human beings, the vibration of the vocal cords produces sound.
- Sound travels through a medium (gas, liquid or solid). It cannot travel in vacuum.
- The eardrum senses the vibrations of sound, It sends the signals to the brain. This process is called hearing.
- The number of oscillations or vibrations per second is called the frequency of oscillation.
- The frequency is expressed in hertz (Hz)
- Larger the amplitude of vibration, louder is the sound.
- Higher the frequency of vibration, the higher is the pitch, and shriller is the sound.
- Unpleasant sounds are called noise.
- Excessive or unwanted sounds lead to noise pollution. Noise pollution may pose health problems for human beings.
- Attempts should be made to minimise noise pollution.
- Plantation on the roadside and elsewhere can reduce noise pollution.
- **Amplitude**: The maximum distance of a vibrating or swinging object from its position of rest.
- **Time Perios**: One complete to and fro movement of the pendulum around its mean position is called one oscillation. The time taken by the vibrating particle to complete one oscillation is called time period.

- **Frequency**: The number of vibrations or oscillations made by a vibrating body in a second. The unit of frequency is hertz (Hz).
- **Characteristics of Sounds**:
  (i) **Loudness**: The sensation produced in the ear which enables us to distinguish between a loud and a faint sound. Larger the amplitude of vibration, the louder is the sound produced.
  (ii) **Pitch**: The characterisitics of sound which distinguishes between a shrill sound and a soft sound. Higher the frequency of vibration, higher is the pitch.
  (iii) **Quality**: Characteristic which enables us to distinguish between musical notes emitted by different musical instruments or voices even though they have the same pitch and loudness.