

**CLASS – 8 (SCIENCE)**  
**Ch - 8 - Sound (Physics)**

**A. Define the following.**

1. Decibel

Ans: Decibel is the unit in which the intensity or level of a sound is expressed.

2. Frequency

Ans: Frequency is the number of vibrations made by a vibrating object in one second

3. Amplitude

Ans: Amplitude is the maximum displacement of a vibrating particle from its equilibrium position or mean position.

4. Pitch

Ans: The shrillness of a sound experienced by a listener is called the pitch of the sound.

**B. Differentiate between the following.**

2. Loudness and amplitude

<b>Loudness</b>	<b>Amplitude</b>
The ear perceives loudness and helps us identify low intensity and high intensity sounds.	Amplitude determines the loudness of a sound.

3. Pitch and frequency

<b>Pitch</b>	<b>Frequency</b>
Pitch tells us about the frequency of a sound. A sound with high frequency has higher pitch than the one with low frequency.	Frequency of a sound is the number of cycles of compressions and rarefactions which take place in one second.

**C. Answer the following questions in brief.**

1. What do you mean by quality of sound wave?

Ans: Quality of a sound wave helps us to distinguish between two sounds having the same pitch and loudness.

5. Differentiate between music and noise.

<b>Music</b>	<b>Noise</b>
1. Musical sound is periodic.	1. Noise is non-periodic.
2. Amplitude is regular and rhythmic.	2. Amplitude is abrupt and irregular.
3. It is pleasing to ears.	3. It is displeasing to ears.
4. Example: Sounds produced by musical instruments	4. Examples: Sounds from factories and vehicles

6. Mention any two harmful effects of noise pollution.

Ans: Two harmful effects of noise pollution are as follows:

- a) Noise pollution leads to increased heartbeat, constriction of blood vessels, dilation of pupils, etc.
- b) Exposure to high noise level may lead to sleep disturbance and discomfort.

### **Application-based Questions**

A. Suppose two objects are colliding in space just above Earth's atmosphere. Can we hear the sound produced due to the collision? Justify.

Ans: No, we cannot hear the sound produced due to the collision of two objects in space. This is because there is no air in space and sound needs a medium to propagate.

B. Why do some people put their ear on to the track to hear a train approaching from a far-off distance?

Ans: Sound travels the fastest through solids. So some people put their ear on to the track to hear a train approaching from a far-off distance.

### **Picture-based Question**

1. The strings of a guitar have different thicknesses. What purpose does the varying thickness serve?

Ans: Different thicknesses of a guitar strings help to produce sounds of different pitch.

2. The frequency of the thinnest string (string 1) is 330 Hz. What can be said about the frequency of string 3?

Ans: As string 3 is thicker than string 1, the frequency of sound produced by string 3 would be less than the frequency of sound produced by string 1.

3. String 1 has a length of 112 cm and has a frequency of 330 Hz. If the string is tightened to reduce the length to 111.7 cm, what would happen to the frequency?

Ans: Reducing the length of the string would increase the frequency of the sound produced.

4. Does hitting the string 1 with more force change the pitch?

Ans: No. Increased force changes the loudness of the pitch.