

## Winmeen Tnpsc Group 1 & 2 Study Materials

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Tnpsc Group 2 Complete Syllabus : <https://goo.gl/fNSnMN>

Tnpsc Group 2 Previous Questions : <https://goo.gl/PYqsd7>

Tnpsc Group 2 Model Questions : <https://goo.gl/xQvyTk>

### 21. Sound

1. What are the significance of sound?

- Sound makes it possible for us to communicate with one another through speech.
- It enables us to share our thoughts and ideas with others.
- Musical sound gives us pleasure.
- Sounds from radio and television give us information and entertainment.
- Horn sounds ( honking of vehicles) alert us and keep us safe on the road.

2. What is vibration?

Vibrations are “repeated small to and fro motion of objects”.

3. How is sound waves created?

Sound waves are created by vibrating bodies and sound is a sensation ‘heard’ by the listener.

4. How do sound waves travel?

Sound waves can travel through liquids, solids as well as gases. The substance (solid, liquid or gas) through which the sound waves travel is called a medium.

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Sound waves need a material medium to propagate; they cannot travel through vacuum.

5. Who proved sound waves cannot travel through vacuum?

Robert Boyle, the scientist, proved that sound waves cannot pass through vacuum or empty space.

6. What is waves?

A wave is a series of disturbances that move through a medium. The particles of the medium do not move from the source to the destination, but the disturbance alone is carried from the source to the destination.

7. What are the characteristics of wave?

Waves that require a material medium to propagate, such as sound waves, are referred to as mechanical waves. Mechanical waves are of two kinds - longitudinal waves and transverse waves. Some waves such as electromagnetic waves do not require a medium to propagate and can travel through vacuum.

8. What are the types of wave?

- Electromagnetic Waves Mechanical Waves (Transverse waves) (eg. Light waves, Infrared waves, Ultraviolet waves, etc.)

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- Mechanical Waves which is further classified as Longitudinal waves eg: sound waves Transverse waves eg: water waves

9. What is longitudinal waves?

“If the particles of a medium vibrate in a direction, parallel to or along the direction of the propagation of wave, it is called a longitudinal wave.”

10. What is compression and rarefaction?

Compression is the area with maximum pressure, rarefaction is the area with minimum pressure.

11. What is transverse waves?

“If the particles of the medium vibrate in a direction, perpendicular to the direction of propagation, the wave is called a transverse wave.”

12. Discuss about transverse waves?

- Particles of the medium vibrate in a direction which is perpendicular to the direction of propagation.
- Crests and troughs are formed
- Can travel through solids and surfaces of liquids.
- eg. Water waves

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13. Discuss about longitudinal waves?

- Particles of the medium vibrate in a direction which is parallel to the direction of propagation.
- Compressions and rarefactions are formed.
- Can travel through solids, liquids and gases.
- eg. Sound waves

14. What is amplitude?

The maximum displacement of a particle from the mean position is called amplitude. Its unit is metre.

15. What is time taken?

Time taken by a particle of the medium to complete one vibration is called Time period. Its unit is second.

16. What is frequency?

The number of vibrations completed by a particle in one second is called frequency . Its unit is hertz.

$$n = 1/T$$

17. What is wave length?

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Distance moved by a wave during the time a particle completes one vibration. Its unit is metre.

18. What is relationship between velocity of wave, wave length and frequency?

Distance travelled by a wave in one Time period, T, Distance  $\lambda$  Time

Velocity,  $V = \text{Distance}/\text{Time} = \lambda/T$

But Frequency  $n = 1/T$

Therefore  $v = n\lambda$

19. How do sound travel?

Sound travels almost five times faster through water and twenty times faster through iron than it travels in air. Speed of light ( $3 \times 10^8 \text{m/s}$ ) is even faster than the speed of sound ( $340 \text{m/s}$ ).

20. What is echo?

Sound waves can be reflected from large surfaces such as large walls of a building, sides of a hill or the walls of a cave. When reflected sound waves reach the ear, it can be heard distinctly after the original sound has stopped. This is called an Echo.

21. What is reverberation?

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The repeated reflections that result in the persistence of sound, often referred to as 'rolling sound' is called reverberation.

22. Who gave first proof for radio waves?

Hertz, a German scientist, gave the first experimental proof of the existence of radio waves.

23. What is the audible range of sound for human and some animals?

- Human 20 - 20,000 Hertz
- Elephant 16 - 12,000 Hertz
- Dolphins 70 - 1,50,000 Hertz
- Cat 100 - 32,000 Hertz

24. What is SONAR?

The word "SONAR" is an acronym for "Sound, Navigation And Ranging". A sonar consists of transmitter, detector, and display. The transmitter produces and transmits pulses of ultrasonic waves.

These waves travel through water and after striking some underwater object such as the seabed or a shoal of fish, get reflected and are received by the detector.

25. What is ultra sonic waves?

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‘Ultrasonic waves’ can be used to visualize inner organs of the human body. Pulses of ultrasonic waves are passed through parts of the body, which get reflected by organs. When several pulses are sent and received, it is possible to build a picture of the object reflecting the wave pulses. This is called ultrasonography.

26. Who was first to make attempt on Doppler Effect?

Doppler was the first to explain this phenomenon and hence, it has been named after him as the Doppler Effect.

