Class 8 IGCSE Sound Worksheet
Name: _____
Date: _____

Section A: Nature and Production of Sound
1. Define sound.
2. How is sound produced? Give an example.
3. Why can't sound travel in a vacuum?
4. Name the organ in humans responsible for producing sound.
5. What type of wave is a sound wave? (Longitudinal/Transverse)
6. Explain the terms *compression* and *rarefaction*.
7. How do tuning forks produce sound?
8. Why does a vibrating guitar string stop producing sound when touched?
9. What is the role of the vocal cords in sound production?
10. Name two animals that use sound for communication.

Section B: Propagation of Sound
11. What is a medium? Name three mediums through which sound travels.
12. Explain why sound travels faster in solids than in gases.
13. Describe an experiment to show sound requires a medium.
14. Why is the moon silent?
15. Arrange in order of increasing speed: sound in air, water, steel.

Section C: Characteristics of Sound Waves
16. Define:
   a) Amplitude
   b) Frequency
   c) Wavelength
17. How does amplitude relate to loudness?
18. What is the unit of frequency?
19. A sound wave has a frequency of 250 Hz. What does this mean?
20. Explain the difference between *pitch* and *loudness*.
21. Draw a diagram of a longitudinal wave and label compression and rarefaction.
22. What determines the quality (timbre) of sound?
23. Why do men have deeper voices than women?
24. If the amplitude of a sound wave doubles, how does loudness change?
25. What is the audible range of frequency for humans?

Section D: Speed of Sound
26. State the formula for calculating the speed of sound.
27. Calculate the speed of sound if it travels 1.5 km in 4.5 seconds.

28. Why does sound travel faster on a hot day compared to a cold day?
29. The speed of sound in air is 340 m/s. How long will it take to travel 1.7 km?
30. Explain why sound travels faster in hydrogen gas than in oxygen.

Section E: Reflection of Sound (Echo)
31. Define echo.
32. What is the minimum distance required to hear an echo? (Speed of sound = 340 m/s)
33. How is echo used in *sonar*?
34. A ship detects an echo 0.4 seconds after emitting a sound pulse. Calculate the depth of the seabed (speed of sound in water = 1500 m/s).
35. Why are ceilings of concert halls curved?
36. How do bats use echolocation?
37. Why do we rarely hear echoes in small rooms?
38. Name two applications of ultrasound.
39. What is reverberation? How is it reduced?
40. Explain how a stethoscope works.

Section F: Human Ear and Ultrasound
41. Label the parts of the human ear: eardrum, cochlea, auditory nerve, pinna.
42. How does the ear convert sound into electrical signals?
43. What is noise pollution? List two harmful effects.
44. How do noise-canceling headphones work?
45. Why are ultrasounds used in medical imaging?
46. What is the range of ultrasound frequencies?
47. Explain how ultrasound breaks kidney stones.
48. Why can’t humans hear ultrasound?
49. How is SONAR different from RADAR?
50. Give one use of ultrasound in industry.