# CBSE

## SOUNDS WS 5

### Class 09 - Science

**Section A**

1. In SONAR, we use **[1]**

   a) infrasonic waves
   b) audible sound waves
   c) radio waves
   d) ultrasonic waves

2. The terms ultrasonic, supersonic and infrasonic mean **[1]**

   a) increasing frequency
   b) different parameters and so cannot be related
   c) increasing loudness
   d) decreasing frequency

3. Frequency of ultrasonic wave is: **[1]**

   a) Greater than 2 MHz
   b) Greater than 20 Hz
   c) Greater than 2 Hz
   d) Greater than 20,000 Hz

4. Which of the following is used in echocardiography? **[1]**

   a) X-Ray waves
   b) Infrasound waves
   c) Both Ultrasound waves and X-Ray waves
   d) Ultrasound waves

5. Sometimes sound produced by bats, dolphins are **[1]**

   a) all of these
   b) ultrasonic
   c) ultraviolet
   d) infrasonic

6. Infrasonic sound is produced by: **[1]**

   a) Rhinoceros
   b) Dogs
   c) Rats
   d) Bats

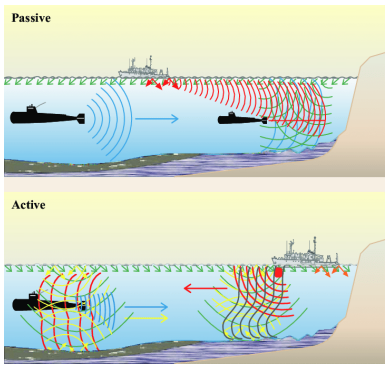
7. **State True or False:** **[1]**

   (a) SONAR stands for Sound Navigation And Ranging. **[1]**

8. **Fill in the blanks:** **[1]**

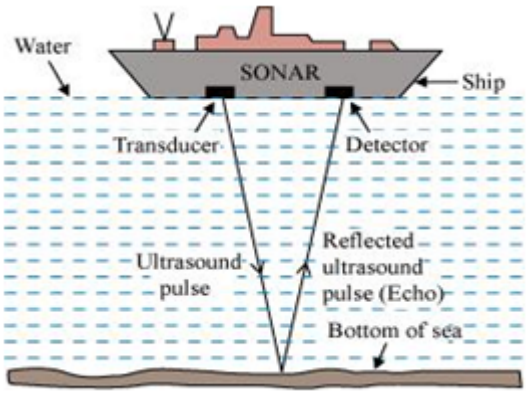
   (a) _____ finds applications in industry, medical science, and communication. **[1]**

9. Which part of Sonar converts the ultrasonic waves into electrical signals? **[1]**




a) Detector
b) Transmitter
c) Boat
d) Antina

10. The echo-receiver of a sonar attached to a ship receives the echo from the bottom of sea 4 seconds after the ultrasonic waves were sent into the sea. **[1]**




If the speed of sound in water is 1500 m/s, then what is the depth of the sea?

a) 15000 m
b) 6000 m
c) 3500 m
d) 3000 m

11. SONAR uses _____ waves. **[1]**

a) Both Infrasonic and transverse
b) Transverse
c) Ultrasonics
d) Infrasonics

12. Frequency of infrasonic waves is _____ than the frequency of ultrasound waves. **[1]**

a) more
b) less
c) none of these.
d) almost same

13. **Statement A:** Human beings are ultrasound deaf **[1]**
**Statement B:** Ultrasonic waves can travel easily in solid, liquid, and gases.
Which of the two statements is true?

a) Statement A
b) Both A and B
c) Statement B
d) None of the two

14. **Statement A:** Porpoises use ultrasound for navigation and location of food in dark **[1]**
**Statement B:** When you listen to music or watch TV at home, the noise level is 100-120 decibels.
Which of the two statements is true?

a) Neither A or B
b) Statement A
c) Both A and B
d) Statement B

## Section B

15. Explain how defects in a metal block can be detected using ultrasound. **[2]**

16. A submarine emits a sonar pulse, which returns from an underwater cliff in 1.02 s. If the speed of sound in salt water is 1531 m/s, how far away is the cliff? **[2]**

17. Explain how bats use ultrasound to catch a prey. **[2]**

18. A ship sends out an ultrasound that returns from the seabed and is detected after 3.42 s. If the speed of ultrasound through seawater is 1531 m/s, what is the distance of the seabed from the ship? **[2]**

19. A Sonar emits pulses on the surface of water which are detected after reflection from the bottom. If the time interval between the emission and detection of the pulse is 2 s find the depth of water. Take velocity of sound in water as 1531 $ms^{-1}$. **[2]**

20. Explain how bats use ultrasound to catch their prey. **[2]**

21. A sonar device on a submarine sends out a signal and receives an echo 5 s later. Calculate the speed of sound in water if the distance of the object from the submarine is 3625 m. **[2]**

22. How is ultrasound used for cleaning? **[2]**

23. Bats have no eyes still they can ascertain distances, directions nature and size of the objects. Explain why? **[2]**

## Section C

24. Study the given below diagram and answer the following questions: **[3]**

i. Identify the application of ultrasound in the above diagram.

ii. Explain the working principle of this medical procedure.

iii. What is the range of frequencies associated with ultrasound?

25. Reena's grandmother took her mother to a doctor as she was four months pregnant for ultrasonography. But she showed her interest in determining whether the child is a boy or a girl. The doctor was annoyed and refused to disclose the gender of the child. **[3]**

a. What is ultrasonography?

b. On what principle does it work?

c. Why do you think the doctor refused to determine the gender of the child?

d. What values are promoted by the doctor?

## Section D

26. Define frequency and wavelength with reference to sound. Explain, what is echo? Write full form of SONAR. Give two applications of ultrasound. **[5]**