SCIENCE foundation

Class **9** **A** CODE

SCHOOL NAME

CHAPTER TEST

DO NOT OPEN THIS BOOKLET UNTIL ASK TO DO SO

Total Questions: 50 | Time: 1 hr.

Name …… Test Code ……

Roll No …… Section …… Contact Number ……

Guideline for the candidate

1. You will get addition 5 minutes to fill up information about your self on the OMR sheet, before the start exam
2. Write your **Name**, **Class**, **Section**, **Roll Number**, and **Mobile Number** clearly on the **OMR sheet** and do not forget to sign it.
3. The Question Paper comprises two sections:

Science Section (45 Questions), and **Achiever section** (5 Questions)

Each Question in Achiever Section Carries 3 marks, Where as all other Question carry one mark each

4. All Questions are compulsory. There is no negative marking. Use of calculator is not permitted.
5. There is only one correct answer. Choose only ONE option for answer
6. To mark your choice of answer by darkening the circles on the OMR sheet, use **HB Pencil/ Black ball point pen** only.
7. Return the OMR sheet to the invigilator at the end of the exam.
8. Please fill in your personal details in the space provided on this page before attempting the paper.

Students signature…… Invigilator Signature; ……

CHAPTER TEST (Foundation)

Topic: Sound

Subject: Science (Physics) **TEST CODE: F– SC– 09– CT– 11**

Time Allowed: 60 min **Maximum Marks – 60**

SCIENCE SECTION

1. Echo is not heard in a room of 10m × 10m × 10m dimension due to (speed of sound in air = 300 m/s).
   (A) reflection (B) humidity
   (C) absorption (D) persistence

2. The minimum size of a room required to hear an echo of sound with a speed of 300 m/s is
   (A) 17 m (B) 15 m
   (C) 16 m (D) 14 m

3. Stethoscope works on the principle of:
   (A) Refraction of sound
   (B) Multiple reflections of sound
   (C) Ultrasounds
   (D) Both multiple reflections of sound and ultrasound

4. While verifying the laws of reflection of sound, out of following precautions which one should not be followed?
   (A) The reflecting surface should be smooth and hard
   (B) Ear should not be placed close to the pipe
   (C) The table top should be horizontal
   (D) Length of pipes should be sufficiently long

5. SI unit of frequency is:
   (A) $(\text{second})^2$ (B) second
   (C) $(\text{second})^{-2}$ (D) hertz

6. When we change feeble sound to loud sound we increase its
   (A) Velocity (B) Amplitude
   (C) Wavelength (D) Frequency

7. In an auditorium or big hall the walls are provided with sound- absorbant materials, why?
   (A) To make the hall look better.
   (B) So, that the sound from the stage may be heard properly.
   (C) So, that echo effect may be minimized.
   (D) So, that the sound may appear to be pleasing

8. Wave motion transfers
   (A) mass (B) velocity
   (C) energy (D) momentum

9. The frequency of a visible light of wavelength 600 nm is
   (speed of light = 3×10^8 m/s), ($1\text{nm} = 10^{-9}$ m)
   (A) 50 Hz (B) 5×10^{14} Hz
   (C) 0.5×10^{16} Hz (D) 500 Hz

10. In which of the following medium will the sound wave travel faster
    (A) Vacuum (B) Air
    (C) Steel (D) Water

11. A pulse
    (A) is a short duration disturbance
    (B) does not repeat
    (C) all of these
    (D) can travel

12. Sound is produced when
    (A) The prongs of the fork are vibrated
    (B) Stretched rubber band is plucked
    (C) Mechanical vibrations are produced
    (D) All of these

13. Earthquake produces which kind of sound before the main shock wave begins
    (A) Audible sound
    (B) Ultrasound
    (C) Infrasound
    (D) As a supersonic wave

14. For reflection of sound wave, we need:
    (A) A large size, the opaque reflecting surface
    (B) A glass plate
    (C) A polished mirror
    (D) A concave surface painted blue

15. A wave is moving with a speed of 3000 m/s with reversal after every 0.1 second. The wavelength of the wave is
(A) 6 m (B) 0.06 m
(C) 30 m (D) 300 m

16. Speed of sound in air and water are given as v_a and v_w respectively. Then
(A) $v_w > v_a$ (B) $v_a = v_w$
(C) $v_a > v_w$ (D) $v_a = 2v_w$

17. The frequency of a source is 20 kHz. The frequencies of the sound waves produced by it in water and air will
(A) Depend upon the wavelength of the waves in these media
(B) Depend upon the velocity of the waves in these media
(C) Be the same as that of the source
(D) Depend upon the density of the media.

18. In a wave motion in string, every particle:
(A) displaces from one end to the other end
(B) does not displace at all
(C) oscillates
(D) does not oscillate

19. Sound travels with a speed of about 330 ms^{-1}. What is the wavelength of sound whose frequency is 660 Hz?
(A) 500 m (B) 5 m
(C) 0.5 (D) 50 m

20. Sonic booms are caused due to the variation of
(A) pressure (B) humidity
(C) loudness (D) speed

21. The wave number of wave of wavelength 10 m is
(A) $10m^{-1}$ (B) $100m^{-1}$
(C) $0.01m^{-1}$ (D) $0.1\ m^{-1}$

22. A boat is rocked by waves such that a crest and a trough reach at an interval of 0.1 seconds with a speed of 50 m/s. The distance between two consecutive crests is
(A) 5 m (B) 20 m
(C) 10 m (D) 15 m

23. Infrasonic sound is produced by:
(A) Rhinoceros (B) Dogs
(C) Rats (D) Bats

24. On which of the following factor the speed of propagation of pulse in a slinky does not depend?
(A) Room temperature
(B) Dimensions of slinky
(C) Length of slinky
(D) Material of slinky

25. The terms ultrasonic, supersonic and infrasonic mean
(A) increasing frequency
(B) different parameters and so cannot be related
(C) increasing loudness
(D) decreasing frequency

26. Frequency of ultrasonic wave is:
(A) Greater than 2 MHz
(B) Greater than 20 Hz
(C) Greater than 2 Hz
(D) Greater than 20,000 Hz

27. In the experiment of verification of reflection of sound, the incident sound is directed along:
(A) axis of tube
(B) at an angle of 45º from the axis of the tube
(C) normal to the axis of tube
(D) at an angle of 30º from the axis of the tube

28. Two sounds of same pitch and loudness differ in their:
(A) note (B) frequency
(C) tone (D) quality

29. Which of the following is used in echocardiography?
(A) X – Ray waves
(B) Infrasound waves
(C) Both Ultrasound waves and X- Ray waves
(D) Ultrasound waves

30. The distance between two consecutive compression of a sound wave is 5 cm. Then the wavelength of the wave is equal to
(A) 2.5 cm (B) 20 cm
(C) 10 cm (D) 5 cm

31. A sound wave travelling in a medium is represented as shown in figure.

If vibrating source of sound makes 360 oscillations in 2 minutes, then the amplitude, wavelength (λ) and frequency (ν) of the sound wave respectively are (Take velocity of sound as 342 m s^{-1})
(A) 1 m, 100 m and 10 Hz
(B) 2 m, 3 m and 14 Hz
(C) 1 m, 114 m and 3 Hz
(D) 1 m, 5 m and 20 Hz

32. Reflection of sound obeys the law
(A) $\angle i = 2 \angle r$ (B) $\angle i = \angle r$
(C) $\angle i < \angle r$ (D) $\angle i > \angle r$

33. **Statement 1:** Echo is produced when sound is incident on hard and polished surface.
Statement 2: Sound energy can be totally reflected by the objects with soft and loose texture.
(A) Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
(B) Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
(C) Both statements 1 and 2 are false.
(D) Statement 1 is true but statement 2 is false.

34. The audible range of the human ear is:
(A) 2Hz – 2000 Hz
(B) 2Hz – 20 kHz
(C) 20 Hz – 20 MHz
(D) 20 Hz – 20,000 Hz

35. When sound gets reflected from a surface:
(A) the angle of reflection is always less than the angle of incidence
(B) the angle of reflection is always equal to the angle of incidence
(C) the angle of reflection is always equal to 90º
(D) the angle of reflection is always more than the angle of incidence

36. The types of wave produced by sound in air:
(A) Electro magnetic wave
(B) Transverse wave
(C) Longitudinal wave
(D) Radio waves

37. An insect makes sound that is higher than the maximum audible frequency of human beings. Given that speed of sound in air is approximately 340 m s^{-1}, which of the following could be the wavelength of the sound?
(A) 3.2×10^{-1} m (B) 1.4×10^{-2} m
(C) 5.0 m (D) 3.6×10^{-2} m

38. Sound waves cannot propagate in
(A) metals (B) air
(C) water (D) vacuum

39. The audible range of hearing for the rabbit is _____ than humans.
(A) equal
(B) lesser
(C) higher than or equal to
(D) higher

40. Wave motion is a periodic _____produced by a vibrating body.
(A) Energy (B) Disturbance
(C) oscillations (D) Momentum

41. Echo is produced if the distance between the source of the sound and the listener is more than _____.
(A) 12 metre (B) 17 metre
(C) 15 metre (D) 10 metre

42. **Assertion (A):** Waves produced by a motorboat sailing in water are both longitudinal and transverse in nature.
Reason (B): The longitudinal and transverse waves cannot be produced simultaneously.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

43. **Assertion (A):** The amplitude of a wave is the same as the amplitude of the vibrating body producing the wave.
Reason (R): The loudness or softness of a sound is determined by its amplitude.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

44. **Assertion (A):** Sound is produced when an object vibrates or moves back and forth rapidly.
Reason (R): The energy required to make an object vibrate is provided by some outside source.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

45. **Assertion (A):** The longitudinal waves are called pressure waves.
Reason (R): Propagation of longitudinal waves through a medium involves changes in pressure and volume of air, when compression and rarefaction are formed.
(A) Both A and R are true and R is the correct explanation of A.
(B) Both A and R are true but R is not the correct explanation of A.
(C) A is true but R is false.
(D) A is false but R is true.

ACHIEVERS SECTION

46. Match the following with the correct response **:**

	Column-I		Column-II
(a)	Amplitude	(i)	The number of waves produced per second
(b)	Time period	(ii)	The time required to complete one oscillation
(c)	Frequency	(iii)	The maximum displacement of the particles of a medium from their mean positions
(d)	Wave velocity	(iv)	The distance travelled by a wave in one second

(A) (a) – (ii), (b) – (iv),(c) – (i), (d) – (iii)
(B) (a) – (iv), (b) – (i),(c) – (iii), (d) – (ii)
(C) (a) – (i), (b) – (iii),(c) – (ii), (d) – (iv)
(D) (a) – (iii), (b) – (ii), (c) – (i), (d) – (iv)

47. Match the following with correct response.

(1)	Loudness	(a)	Shock waves
(2)	Supersonic speed	(b)	Distinguish two sounds
(3)	Pitch	(c)	Frequency
(4)	Timbre	(d)	Amplitude

(A) 1 – A, 2 – C, 3 – B, 4 – D
(B) 1 – B, 2 – D, 3 – A, 4 – C
(C) 1 – C, 2 – B, 3 – D, 4 – A
(D) 1 – D, 2 – A, 3 – C, 4 – B

48. Match the following with correct response.

	Column-I		Column-II
(1)	Speed of sound in Aluminium	(A)	6420 ms^{-1}
(2)	Speed of sound in water	(B)	343 ms^{-1}
(3)	Speed of sound in air	(C)	1484 ms^{-1}
(4)	Speed of sound in oxygen gas	(D)	326 ms^{-1}

(A) 1 – C, 2 – B, 3 – D, 4 – A
(B) 1 – A, 2 – C, 3 – B, 4 – D
(C) 1 – B, 2 – D, 3 – A, 4 – C
(D) 1 – D, 2 – A, 3 – C, 4 – B

49. Match the following with the correct response **:**

	Column-I		Column-II
(a)	Moving disturbance	(i)	Mechanical waves
(b)	Propagation requires a material medium	(ii)	Oscillatory motion
(c)	Particles vibrate perpendicular to the direction of wave propagation	(iii)	Transverse waves
(d)	Back and forth motion	(iv)	Wave

(A) (a) – (i), (b) – (iii),(c) – (ii), (d) – (iv)
(B) (a) – (ii), (b) – (iv), (c) – (i), (d) – (iii)
(C) (a) – (iii), (b) – (ii), (c) – (iv), (d) – (i)
(D) (a) – (iv), (b) – (i), (c) – (iii), (d) – (ii)

50. Match the column I with column II and mark the correct option from the codes given here.

	Column-I		**Column-II**
(a)	String vibration	(i)	Tabla
(b)	Membrane vibration	(ii)	Bicycle bell
(c)	Vibration of air column	(iii)	Sitar
(d)	Vibration of plate	(iv)	Flute

(A) (a) – (i), (b) – (iv), (c) – (ii), (d) – (iii)
(B) (a) – (ii), (b) – (iii), (c) – (i), (d) – (iv)
(C) (a) – (iv), (b) – (ii), (c) – (iii), (d) – (i)
(D) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii)