SYLLABUS :MATTER IS OUR SURROUNDINGS, ATOMS & MOLECULES, FUNDAMENTAL OF LIFE, DIVERSITY INLIVING ORGANISMS, MOTION, SOUND, WHY DO WE FALL ILL.

GENERAL INSTRUCTIONS : Draw Diagrams with Pencils.

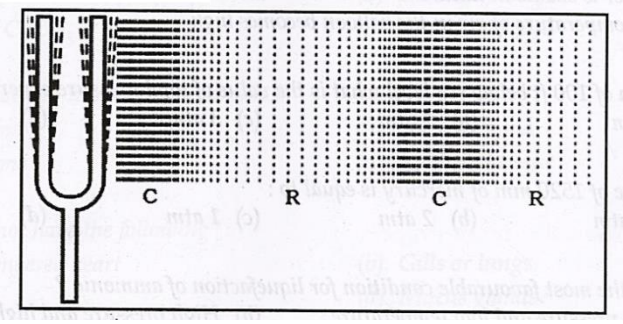
- All questions are compulsory. **Maximum Marks are 60**.
- The question paper consists of 25 Questions.
- **Section – A** : Question 1 to 10 are 1mark each.
- **Section** – B : Question 11 to 20 are 3 marks each.
- **Section** – C : Question 21 to 24 are 5 marks each.

SECTION A : (1 × 10 = 10)

1. Which gas is called dry ice? Why?

Answer question numbers 3(a) – 3(d) on the basis of your understanding of the following paragraph and the related studies concepts.

A wave is a disturbance that moves through a medium when the particles of a medium set neighbouring particles into motion. They in turn produce similar motion in others. The particles of the medium do not move forward themselves, but the disturbance is carried forward. This is what happens during propagation of sound in a medium, hence sound can be visualised as a wave. Sound waves are characterised by the motion of particles in the medium and are called mechanical waves.



Air is the most common medium through which sound travels. When a vibrating object moves forward, it pushes and compresses the air in front of it creating a region of high pressure. This region is called a compression (C), as shown in Fig. This compression starats to move away from the vibrating object. When the vibrating object moves backwards, it creates a region of low pressure called rarefaction (R), as shown in Fig. As the object moves back and forth rapidly, a series of compressions and rarefactions is created in the air. These make the sound wave that propagates through the medium. Compression is the region of high pressure and rarefaction is the region of low pressure. Pressure is related to the number of particles of a medium in a given volume. More density of the particles in the medium gives more pressure and vice versa. Thus, propagation of sound can be visualised as propagation of density variations or pressure variations in the medium.

2. What is a wave?

3. Sound wave is which type of wave?

4. What is compression?

5. What is rarefaction?

6. Which of these options are not a function of Ribosomes?
(i) it helps in manufacture of protein molecules.
(ii) it helps in manufacture of enzymes
(iii) it helps in manufacture of hormones
(iv) it helps in manufacture of starch molecules
(a) (i) and (ii) (b) (ii) and (iii)
(c) (iii) and (iv) (d) (iv) and (i)

7. Which of the following tissues has dead cells?
(a) Parenchyma (b) Sclerenchyma
(c) Collenchyama (d) Epithelial tissue

8. Area under a v – t graph represents a physical quantity which has the unit:
(a) m^2 (b) m (c) m^3 (d) $m\ s^{-1}$

9. Which of the following represent 1 u?
(a) mass of 1 hydrogen atom (b) Mass of C – 12 atom
(b) (c) Mass of O – 16 atom (d) 1 / 12^{th} of mass of C – 12 atom

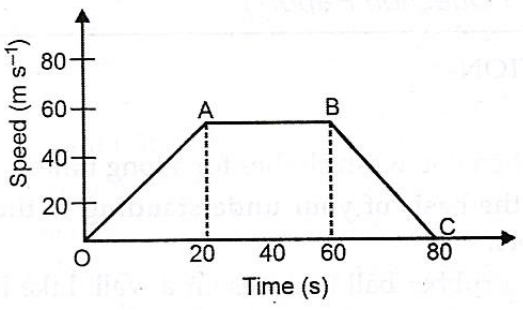
10. Which of the following can make you ill if you come in contact with an infected person?
(a) High blood pressure (b) Genetic abnormalities
(c) Sneezing (d) Blood cancer

SECTION B : (3 × 10 = 30)

11. Distinguish between solids, liquids and gases in tubular form under the following characteristics:
(a) Interparticle force of attraction (b) Diffusion (c) Compressibility

12. Explain giving reasons:
(a) Our surrounding area should be free of stagnant water.
(b) Social harmony and good economic conditions are necessary for good health.

13. Study the speed – time graph of a car below and answer the following questions:

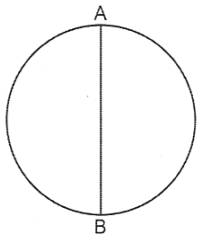


(a) what type of motion is represented by OA?
(b) Find acceleration from B to C.
(b) Calculate the distance covered by the body from A to B.

14. (a) Which organelle is known as the powerhouse of the cell? Why?
(b) Where do the lipids and proteins constituting the cell membrane get synthesised?
(c) Define chromoplasts.

15. Differentiate between the following :
(a) Diploblastic and triploblastic
(b) Warm blooded and cold blooded animals
(c) Bryophyta and Pteridophyta?

16. A circular track has a circumference of 314 m with AB as one of its diameter. A cyclist travels from A to B along the circular path with a velocity of constant magnitude 15.7 m s^{-1}.



(a) Distance moved by the cyclist.
(b) Displacement of the cyclist, if AB represents north – south direction.
(c) The average velocity of the cyclist.

OR

(a) Why sound waves are called mechanical waves?
(b) How will you differentiate a high pitch sound from a low pitch sound with the help of a graph?

17. (a) The atomic number of three elements A, B and C are 9, 10 and 13 respectively. Which of them will form a cation?
(b) What is meant by the following:
(i) Molar mass (ii) Valency

OR

Calculate number of atoms in 120g of calcium and 120 g of iron. Which one has more number of atoms and how much is the difference?
(Given atomic mass of calcium = 40 u and iron = 56 u)

18. What is uniform circular motion. Why it is accelerated?

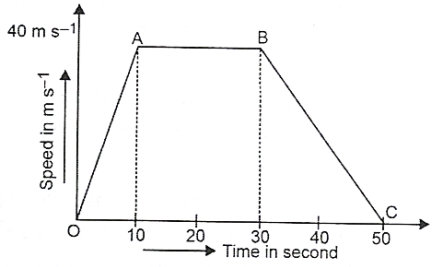
19. (a) What is immunisation?
(b) Define immunity and vaccination?
(c) Define vaccine.

20. Account for the following:
(a) We wear cotton clothes in summer.
(b) A wet handkerchief is placed on the forehead of a person suffering from high fever.
(c) Wet clothes dry slowly during rainy season.

SECTION C : (5 × 4 = 20)

21. What is the function of:
(a) Cellulose in cell wall?
(b) Digestive enzymes in Lysosomes?
(c) Differentiate between rough ad smoth endoplasmic reticulum.

22. Study the speed time – graph of a car given below and answer the questions that follow:
(i) What type of motion is represent by OA?
(ii)What type of motion is represent by AB?
(iii) What type of motion is represent by BC?
(iv) What is the acceleration of the car from O to A?
(v) What is the acceleration of the car from A to B?
(vi) What is the retardation of car from B to C?



23. (a) Briefly mention three uses of ultrasound in the field of medicine.

(b) A ship which is stationary is at a distance of 2800 m from the sea – bed. The ship an ultrasound signal to the sea – bed and its echo is heard after 4 s. Find the speed of sound in water.

OR

Define the following characteristics of sound:

(a) (i) Pitch (ii) Loudness (iii) Quality or Timbre

(b) A boy receives his echo 3 s later. Find the distance of the reflecting surface from the boy. Speed of sound in air is 342 m s^{-1}.

24. (a) Calculate the number of moles in 112 g of iron.

(b) Calculate the mass of 0.5 mole of sugar (C_{12} H_{22} O_{11}).

(c) Calculate the number of atoms in 8 g of oxygen (O_2) molecules.

(Atomic mass of Fe = 56 u, C = 12u u, H = 1 u, O = 16 u, $N_A = 6.022 \times 10^{23} mol^{-1}$)