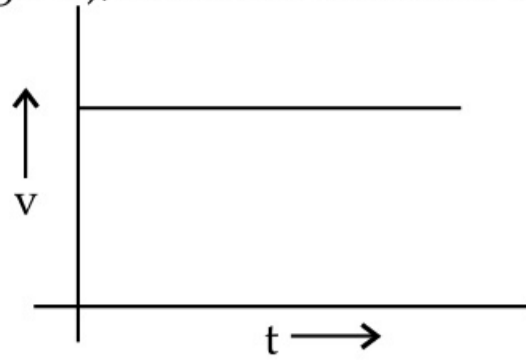


- AI** 1. From the given  $v-t$  graph (see figure), it can be inferred that the object is



- (a) in uniform motion  
(b) at rest  
(c) in non-uniform motion  
(d) moving with uniform acceleration
2. On converting  $25^{\circ}\text{C}$ ,  $38^{\circ}\text{C}$  and  $66^{\circ}\text{C}$  to Kelvin scale, the correct sequence of temperature will be:  
(a) 298 K, 311 K and 339 K  
(b) 298 K, 300 K and 338 K  
(c) 273 K, 278 K and 543 K  
(d) 298 K, 310 K and 338 K

OR

Which condition out of the following will increase the evaporation of water?

- (a) Increase in temperature of water  
(b) Decrease in temperature of water  
(c) Less exposed surface area of water  
(d) Adding common salt to water

- AI** 3. Which among the following is exclusively marine?

- (a) Porifera  
(b) Echinodermata  
(c) Mollusca  
(d) Pisces

OR

Pteridophyta do not have

- (a) Root  
(b) Stem  
(c) Flowers  
(d) Leaves

4. The undefined nuclear region of prokaryotes are also known as

- (a) Nucleus  
(b) Nucleolus  
(c) Nucleic acid  
(d) Nucleoid

5. Which of the following are exotic breeds?

- (i) Brawn  
(ii) Jersey  
(iii) Brown Swiss  
(iv) Jersey Swiss  
(a) (i) and (iii)  
(b) (ii) and (iii)  
(c) (i) and (iv)  
(d) (ii) and (iv)

OR

Which one of the following nutrients is not available in fertilisers?

- (a) Nitrogen  
(b) Phosphorus  
(c) Iron  
(d) Potassium

6. Two substances, A and B were made to react to form a third substance,  $A_2B$  according to the following reaction  $2A + B \rightarrow A_2B$ . Which of the following statements concerning this reaction are incorrect?

- (i) The product  $A_2B$  shows the properties of substances A and B.  
(ii) The product will always have a fixed composition.  
(iii) The product so formed cannot be classified as a compound.  
(iv) The product so formed is an element.  
(a) (i), (ii) and (iii)  
(b) (ii), (iii) and (iv)  
(c) (i), (iii) and (iv)  
(d) (ii), (iii) and (iv)

- AI** 7. The chemical symbol for nitrogen gas is

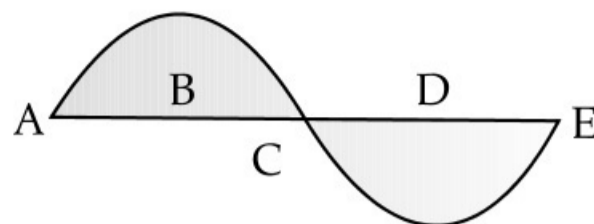
- (a) Ni  
(b)  $N_2$   
(c)  $N^+$   
(d) N

8. A boy is whirling a stone tied with a string in a horizontal circular path. If the string breaks, the stone

- (a) Will continue to move in the circular path.  
(b) Will move along a straight line towards the centre of the circular path.  
(c) Will move along a straight line tangential to the circular path.  
(d) Will move along a straight line perpendicular to the circular path away from the boy.

9. The commercial unit of energy consumption in households, industries and commercial establishments is
- (a) Joule (b) Watt  
(c) kW (d) kWh (kilowatt hour)

10. In the given curve, half the wavelength is



- (a) AB (b) BD  
(c) DE (d) AE
11. When a drop of blue ink is put in water, the blue colour spreads and the whole solution becomes blue. Name the phenomenon due to which this happens.

OR

State one difference between gas and vapour.

12. How many atoms are there in 1 gm of hydrogen ?

OR

Interpret the number of moles of oxygen atoms in  $\text{PO}_4^{3-}$ .

13. What is the formula for relative density ?
14. Study the composition of the two nuclei of two atomic species L and M.  
L = protons 20, neutrons 20  
M = protons 18, neutrons 22  
Give the relation between the two.

15. Name the complex plant tissues.

OR

Which tissue contains flat squamous cells arranged in many layers to prevent wear and tear of parts ?

**DIRECTIONS (Qs. 16 to 20) : In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:**

- (a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).  
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).  
(c) Assertion (A) is true but reason (R) is false.  
(d) Assertion (A) is false but reason (R) is true.

16. **Assertion :** Cream can be separated from curd by centrifugation.

**Reason :** In centrifugation, immiscible liquids separate out in layers depending on their densities.

17. **Assertion :** Nitrogen is an important structural and functional constituent of living protoplasm.

**Reason :** Plants and animals mostly depend upon atmospheric nitrogen.

- AI** 18. **Assertion :** Work done is different while climbing on stairs or using lift.

**Reason :** Work done depends only on the initial and final position of the object.

19. **Assertion :** Velocity is the speed of an object in a particular direction.

**Reason :** SI unit of velocity is same as speed.

20. **Assertion :** Chances of spreading cholera are higher in a village.

**Reason :** Community health is essential for good individual health.

## Section 'B'

- AI** 21. (i) Draw a well-labelled diagram of *Paramecium*.  
(ii) Name the kingdom to which it belongs to.

OR

What are Phanerogams ? Name its two groups along with the criteria of division.

22. (i) Name the two elemental forms in which carbon occurs.  
(ii) Name any two forms in which carbon is found in combined state with other elements in nature.  
(iii) Briefly explain how it can be said that all life forms are based on carbon containing molecules.

23. (i) Do all bodies immersed in a given fluid experience the same buoyant force ? Explain.  
(ii) A  $100 \text{ cm}^3$  block has a mass of 395 gm. Find its relative density. (Density of water =  $1 \text{ gm/cm}^3$ )

OR

Give the mathematical formula that relates thrust and pressure. Define 1 pascal.  
Calculate the thrust and pressure exerted by a block of 500 N on the surface of table if the surface area in contact is  $2.5 \text{ m}^2$ .

24. (a) What are anions ?  
(b) Write the chemical formulae of the following compounds :  
(i) Ammonium hydroxide  
(ii) Calcium chloride  
(c) Calculate the molecular mass of  $\text{H}_2\text{SO}_4$ .

AI 25. You are provided with mixture of camphor, common salt and soil. Using various techniques how will you separate the components of this mixture. Write the various steps involved.

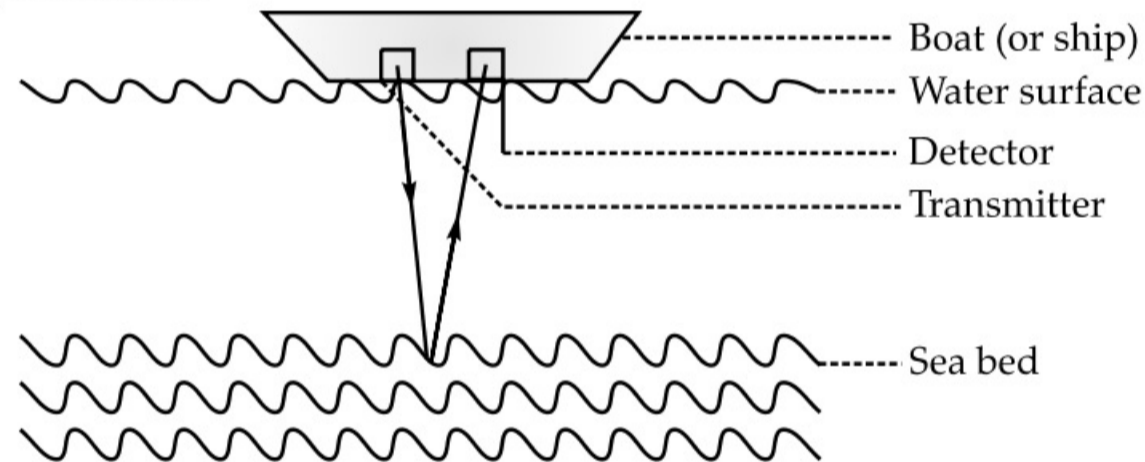
OR

Describe an activity with labelled diagram to obtain dye from blue ink. Name the component which gets evaporated.

26. Identify the type of tissues in the following :  
(i) Vascular bundle (ii) Inner lining of the intestine  
(iii) Lining of kidney tubule (iv) Iris of the eye  
(v) Muscles of the heart (vi) Bronchi of lungs.

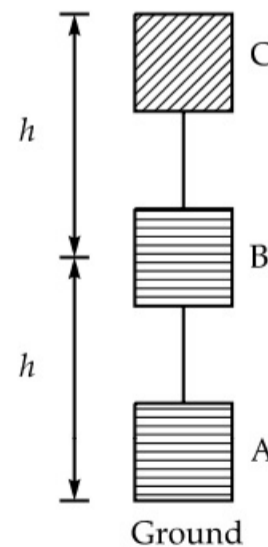
27. Study the figure shown below and answer the following questions :

- (i) Name the technique depicted in the figure.  
(ii) What is the principle of this technique ?  
(iii) List its two applications.



AI 28. Study the given figure and answer the following questions :

- (i) What is the potential energy of the object of mass (m) at point B and C when it is raised from point A to B and B to C.  
(ii) Calculate the potential energy of the object when raised directly from point A to C.  
(iii) Calculate whether the same amount of work is done against the gravity in each case. Write your inference.



29. The distance moved by a student at different intervals of time, while walking to school, is given in the table below :

Time from the starting point (s)	0	10	20	30	40	50
Distance moved (m)	0	15	30	45	30	60

Draw the distance-time graph for the motion of the student indicating the scale chosen. What does the shape of the graph suggest about the type of motion ?

AI 30. Total momentum of two bodies remains unchanged before and after the collision. Justify this statement.

## Section 'C'

31. Two elements  ${}^1\text{H}_1$  and  ${}^{16}\text{O}_8$  form a compound 'Z' which is required during the photosynthesis by plants and is necessary for life.
- Identify 'Z'
  - Write its molar mass.
  - Draw the biogeochemical cycle of 'Z' in nature and explain it.
32. (a) A person weighs 110.84 N on moon, whose acceleration due to gravity is  $1/6$  of that earth. If the value of 'g' on earth is  $9.8 \text{ ms}^{-2}$ . Calculate.
- 'g' on moon.
  - Mass of person on moon
  - Weight of person on earth
- (b) How does the value of g on the earth is related to the mass of the earth and its radius ? Derive it.
33. Explain giving reasons :
- Balanced diet is necessary for maintaining healthy body.
  - Health of an organism depends upon the surrounding environmental conditions.
  - Our surrounding areas should be free of stagnant water.
  - Social harmony and good economic conditions are necessary for good health.
34. Compare in tabular form, the properties of solids, liquids and gases with respect to :
- shape, (ii) volume, (iii) compressibility, (iv) diffusion, (v) fluidity or rigidity.

OR

- Explain with the help of an activity which shows that particles of matter are very small.
- Define matter. Name the states of matter in which the forces between the constituent particles are : (i) strongest, (ii) weakest.
- When sugar and common salt are kept in different jars, they take the shape of the jars. Are they solid ? Justify your answer.

35. Explain Rutherford's  $\alpha$ -particles scattering experiment with diagram and observations.

36. (a) What are the consequences of the following conditions ?
- A cell having higher water concentration than the surrounding medium.
  - A cell having lower water concentration than the surrounding medium.
  - A cell having equal water concentration to its surrounding medium.
- (b) Name the materials of, which the cell membrane and cell wall are composed of.

OR

**AI** Draw a neat diagram of an animal cell and label any four parts of it.