PHYSICS
Chapter-Motion

1. A particle is moving in a circle of diameter 5m. Calculate the distance covered and the displacement when it competes 3 revolutions.

2. A body travels a distance of 15 m from A to B and then moves a distance of 20 m at right angles to AB. Calculate the total distance travelled and the displacement.

3. An object is moving in a circle of radius 'r'. Calculate the distance and displacement
    (ii) when it completes half the circle
    (ii) when it completes one full circle.

4.In a long-distance race, the athletics were expected to take four rounds of the track such that the line of finish was same as the line of start. Suppose the length of the track was 200m.
    (d) What is the total distance to be covered by the athletics?
    (d) What is the displacement of the athletics when they touch the finish line?
    (d) Is the motion of the athletics uniform or non-uniform?
    (d) Is the displacement of an athletic and the distance covered by him at the end of the race equal?

5.Amit is moving in his car with a velocity of 45 km/hr. How much distance will he cover
    (b) in one minute and
    (b) in one second.

6.A body is moving with a velocity of 15m/s. If the motion is uniform, what will be the velocity after 10 s?

7.A train travels some distance with a speed of 30 km/hr and returns with a speed of 45km/hr. Calculate the average speed of the train.

8. A car travels along a straight line for first half time with speed 40km/hr and the second half time with speed 60km/hr. Find the average speed of the car.

9.A body starts rolling over a horizontal surface with an initial velocity of 0.5m/s. Due to friction, its velocity decreases at the rate of $0.05m/s^2$. How much time will it take for the body to stop?

10.A car traveling at 36 km/hr speeds upto 70 km/hr in 5 seconds. What is its acceleration? If the same car stops in 20s, what is the retardation?

11.A scooter acquires a velocity of 36 km/hr in 10 seconds just after the start. It takes 20 seconds to stop. Calculate the acceleration in the two cases.

12.The graph in the figure below shows the positions of a body at different times. Calculate the speed of the body as it moves from (i) A to B (ii) B to C and (iii) C to D.
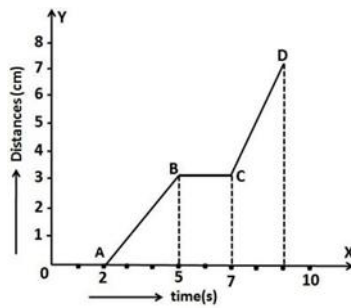
13. The velocity time graph of an ascending passenger lift is given below. What is the acceleration of the lift: (i) during the first two seconds (ii) between 2nd and 10th second (iii) during the last two seconds.
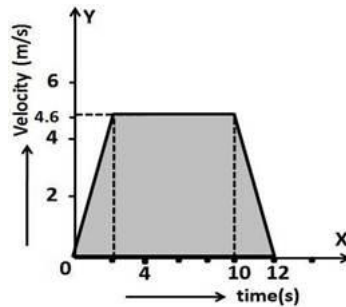
14. Study the speed-time graph of a body shown in below figure and answer the following questions:

   (f) What type of motion is represented by OA?
   (f) What type of motion is represented by AB?
   (f) What type of motion is represented by BC?
   (f) Calculate the acceleration of the body.
   (f) Calculate the retardation of the body.
   (f) Calculate the distance travelled by the body from A to B.
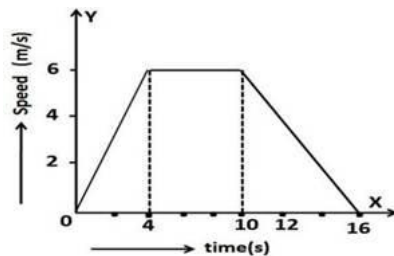
15. In the above question, calculate (i) distance travelled from O to A (ii) distance travelled from B to C.
   (ii) total distance travelled by the body in 16 sec.

Biology Assignment
Chapter- The Fundamental unit of life

Q1. Give contribution of following scientists:

    c) Robert Brown

    c) Leeuwenhoek

    c) Rudolf Virchow

Q2. Given below are two setups.
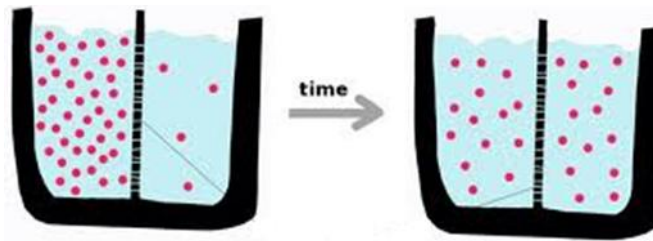
SET UP A

SET UP B

A) Identify the process involved in setup A and B.

B) Define the processes.

C) What is the main difference between the two processes?

Q3. Explain what would happen if cells are placed in hypertonic solution?

Q4. What will happen if the Golgi apparatus is removed from the cell?

Q5. Draw well labeled diagram and write main function of each of the following cell components:

    a) Mitochondria

    b) Lysosomes

    c) Cell wall

    d) Ribosomes

e) Endoplasmic reticulum

Q6. What is plasma membrane composed of and where are the constituents synthesized?

Q7. Name the plastid involved in conversion of green tomato to red.

Q8. Differentiate between the following:

a) SER and RER.

b) Plant cell and animal cell.

c) Chromoplast and leucoplast.

d) Plasma membrane and cell wall.

Q9. Observe the diagram given below and answer the following questions.

A   **B**
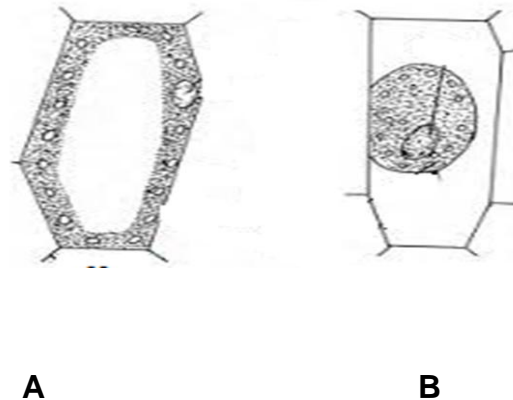
(a) Identify A and B cells.

(b) What will happen if B cells are kept in hypotonic solution?

(c) What will happen if A cells are kept in hypertonic solution?

Q10. We eat food composed of all the nutrients like carbohydrates, proteins, fats, vitamins, minerals and water. After digestion these are absorbed in the form of glucose, amino acids, fatty acids, glycerol etc., which mechanisms are involved in absorption of digested food and water.

Q11. If you are provided with some vegetables to cook, you generally add salt to the vegetables. After adding salt, vegetables release water. Why?

Q12. How is bacterial cell (prokaryotic cell) different from onion peel?

Q13. In brief state what happens when:

   A) Dry apricots are left for some time in pure water and later transferred to sugar solution?

B) a red blood cell is kept in concentrated saline solution?

C) the plasma membrane of a cell breaks down?

D) Rheo leaves are boiled in water first and then a drop of sugar syrup is put on it

E) Golgi apparatus is removed from the cell?

Q14. If cells of onion peel and RBC are separately kept in hypotonic solution, what will happen to each of them? Select the correct option and explain the reason for your answer.

(a) Both the cell will swell.

(b) RBC will burst easily while onion peel will resist the bursting to some extent.

(c) (a) and (b) both are correct.

(d) RBC and onion peel cells will behave similarly.

Q15. A person takes concentrated solution of salt, after sometimes, he starts vomiting. What is the phenomenon responsible for such a situation? Explain.

16. Case based questions

Read the given passage and answer the questions

Plant and animal cells have several differences and similarities. For example, animal cells do not have cell walls or chloroplasts, but plant cells do. Animal cells are mostly round and irregular in shape while plant cells have fixed, rectangular shapes. Plant and animal cells are both eukaryotic cells, so they have several features in common, such as the presence of a cell membrane, and cell organelles, like the nucleus, mitochondria and endoplasmic reticulum.

i. Name the cell organelle and structures held by only plant cell and not by animal cell.

ii. Name two cell organelles that have their own genetic materials.

iii. Why is mitochondria called 'powerhouse of cell'?

iv. What is the main function of lysosomes?

CHEMISTRY

CH 1- Matter In Our Surroundings

Q1. When 50 g of sugar is dissolved in 100 mL of water, there is no increase in volume. What characteristic of matter is illustrated by this observation?

Q2. To which physical state of matter do the following statements apply?

(i) Incompressible, no fixed shape
(ii) Compressible, no definite volume

Q3. Why do the gases exert more pressure on the walls of the container than the solids?

Q4. Why do we see water droplets on the outer surface of a glass containing ice cold water?

Q5. Kinetic energy of particles of water in three vessels A, B and C are E_A, E_B and E_C respectively and $E_A > E_B > E_C$. Arrange the temperatures, T_A, T_B and T_C of water in the three vessels in increasing order.

Q6. Analyse the temperature versus time graph of water, given below.
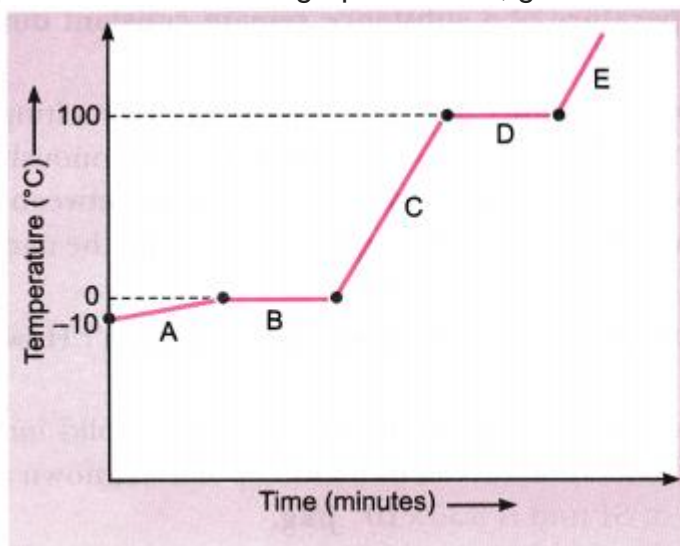
Which region contains all liquids? Give reason.

Q7. Alka was making tea in a kettle. Suddenly she felt intense heat from the puff of steam gushing out of the spout of the kettle. She wondered whether the temperature of the steam was higher than that of the water boiling in the kettle. Comment.

Q8. Which gas is called dry ice? Why?

Q9. A glass tumbler containing hot water is kept in the freezer compartment of a refrigerator (temperature <0°C). If you could measure the temperature of the content of the tumbler, which of the following graphs would correctly represent the change in its

temperature as a function of time?

(a)   (b)   (c)   (d)
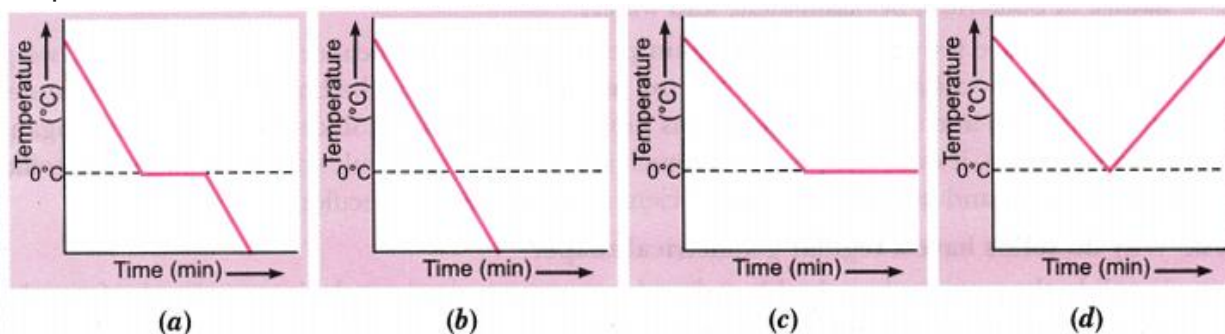
Q10. Why do the doctors advise to put strips of wet cloth on the forehead of a person having high fever?

Q11. Look at the following figures and suggest in which of the glass containers, i.e., A, B, C or D, the rate of evaporation will be the highest? Explain.
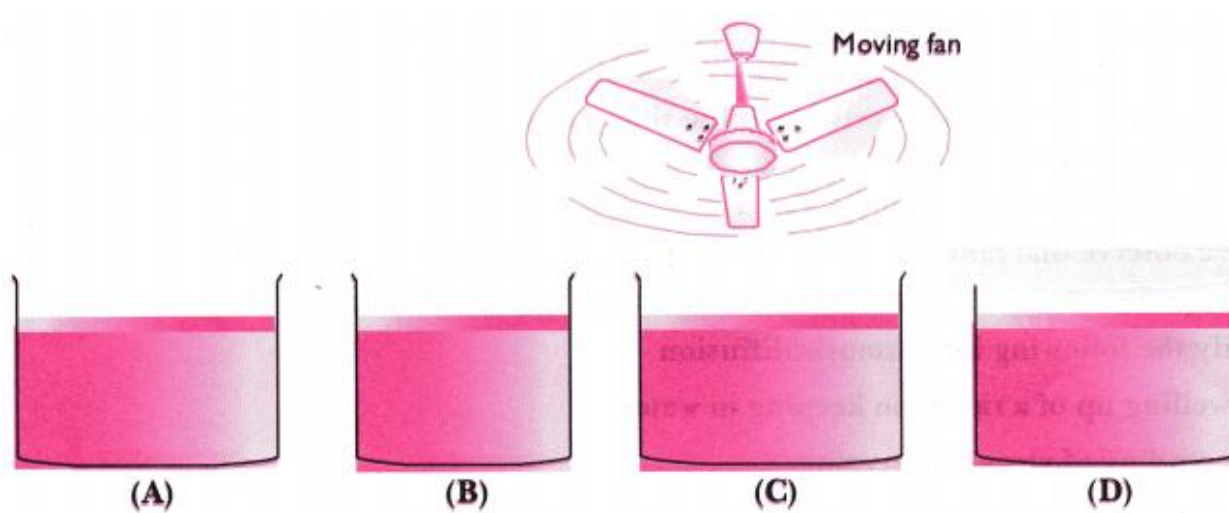
Q12. Why do trees acquire more leaves during summer?

Q13. Suggest an activity to show that the rate of diffusion of liquids decreases with increase in density of the liquid.

Q14. Explain how the rate of evaporation of a liquid is affected with:

- Increase in temperature of the liquid.
- Decrease in exposed surface area.
- Increase in moisture in the surrounding air.
- Increase in wind speed.

Q15. How does evaporation differ from boiling?