

HOLIDAYS HOMEWORK

CLASS : 9

SUBJECT: PHYSICS AND CHEMISTRY

1. Solve the given assignment in notebook.

2. Project Work-

Plan to go to a place by a vehicle. Take readings of odometer and speedometer after every 5 minutes till you reach your destination. Record these observations in tabular form; plot graphs between distance-time and speed-time. State whether this motion is uniform or non-uniform.

Draw 3D Charts on any one of the following topics: Evaporation, Interconversion of states of matter

3. Write the following practicals in lab manual:

I To prepare

a) A true solution of common salt, sugar and alum.

b) A suspension of soil, chalk powder and fine sand in water.

c) A colloid of starch in water and egg albumin in water and distinguish between these on the basis of

i) Transparency

ii) Filtration

iii) Stability

II To prepare

a) A mixture

b) A compound

Using iron filings and sulphur powder, and distinguish between these on the basis of

i) Appearance i.e. homogeneity or heterogeneity

ii) Behavior towards a magnet

iii) Behavior towards carbon disulphide (a solvent)

iv) Effect of heat

III Determination of the melting point and the boiling point of water.

4. Revise the syllabus done in April and May.

PHYSICS: Do this assignment on your Physics Notebook.

1. A particle is moving in a circular path of radius r . The displacement after half a circle would be:

(a) Zero

(c) $2r$

(b) πr

(d) $2\pi r$

2. A body is thrown vertically upward with velocity u , the greatest height h to which it will rise is,

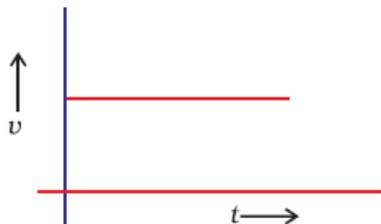
(a) u/g

(c) u^2/g

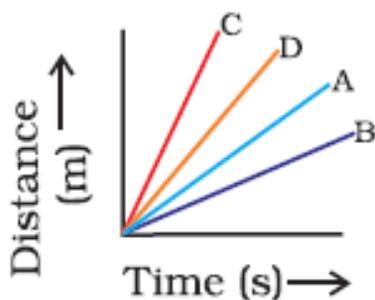
(b) $u^2/2g$

(d) $u/2g$

3. The numerical ratio of displacement to distance for a moving object is
- (a) always less than 1
 (b) always equal to 1
 (c) always more than 1
 (d) equal or less than
4. If the displacement of an object is proportional to square of time, then the object moves with
- (a) uniform velocity
 (b) uniform acceleration
 (c) increasing acceleration
 (d) decreasing acceleration
5. From the given $v - t$ graph, 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
6. Suppose a boy is enjoying a ride on a merry-go-round which is moving with a constant speed of 10 m/s. It implies that the boy is
- (a) at rest
 (b) moving with no acceleration
 (c) in accelerated motion
 (d) moving with uniform velocity
7. Area under a $v - t$ graph represents a physical quantity which has the unit
- (a) m^2
 (b) m
 (c) m^3
 (d) $m s^{-1}$
8. Four cars A, B, C and D are moving on a levelled road. Their distance versus time graphs are shown in Fig. Choose the correct statement

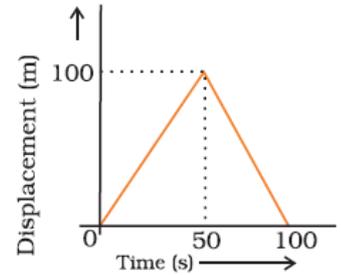


- (a) Car A is faster than car D.
 (b) Car B is the slowest.
 (c) Car D is faster than car C.
 (d) Car C is the slowest.

9. The displacement of a moving object in a given interval of time is zero. Would the distance travelled by the object also be zero? Justify your answer.

10. How will the equations of motion for an object moving with a uniform velocity change?

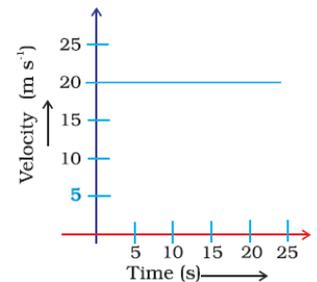
11. A girl walks along a straight path to drop a letter in the letterbox and comes back to her initial position. Her displacement–time graph is shown in given figure. Plot a velocity–time graph for the same.



12. A car starts from rest and moves along the x-axis with constant acceleration 5 m s^{-2} for 8 seconds. If it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from the rest?

13. A motorcyclist drives from A to B with a uniform speed of 30 km h^{-1} and returns back with a speed of 20 km h^{-1} . Find its average speed.

14. The velocity-time graph shows the motion of a cyclist. Find (i) its acceleration (ii) its velocity and (iii) the distance covered by the cyclist in 15 seconds.



15. Draw a velocity versus time graph of a stone thrown vertically upwards and then coming downwards after attaining the maximum height.

16. An object is dropped from rest at a height of 150 m and simultaneously another object is dropped from rest at a height 100 m. What is the difference in their heights after 2 s if both the objects drop with same accelerations? How does the difference in heights vary with time?

17. An object starting from rest travels 20 m in first 2 s and 160 m in next 4 s. What will be the velocity after 7 s from the start?

18. An electron moving with a velocity of $5 \times 10^4 \text{ m/s}$ enters into a uniform electric field and acquires a uniform acceleration of 104 m s^{-2} in the direction of its initial motion.

(i) Calculate the time in which the electron would acquire a velocity double of its initial velocity.

(ii) How much distance the electron would cover in this time?

19. Obtain a relation for the distance travelled by an object moving with a uniform acceleration in the interval between 4th and 5th seconds.

20. Two stones are thrown vertically upwards simultaneously with their initial velocities u_1 and u_2 respectively. Prove that the heights reached by them would be in the ratio of (Assume upward acceleration is $-g$ and downward acceleration to be $+g$).

CHEMISTRY: Do this assignment on your Chemistry Notebook.

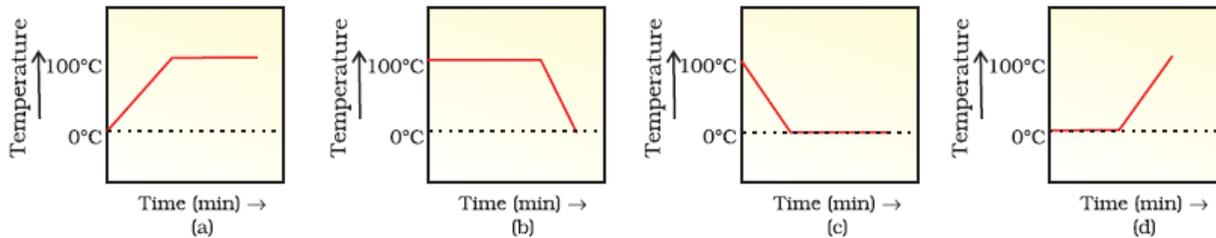
- 1) Which one of the following sets of phenomena would increase on raising the temperature?
- a. Diffusion, evaporation, compression of gases
 - b. Evaporation, compression of gases, solubility
 - c. Evaporation, diffusion, expansion of gases
 - d. Evaporation, solubility, diffusion, compression of gases
- 2) Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends she got confused. Help her to identify the correct set of conditions
- a. Low temperature, low pressure
 - b. High temperature, low pressure
 - c. Low temperature, high pressure
 - d. High temperature, high pressure
- 3) The property to flow is unique to fluids. Which one of the following statements is correct?
- a. Only gases behave like fluids
 - b. Gases and solids behave like fluids
 - c. Gases and liquids behave like fluids
 - d. Only liquids are fluids
- 4) During summer, water kept in an earthen pot becomes cool because of the phenomenon of
- a) diffusion
 - b) transpiration
 - c) osmosis
 - d) evaporation
- 5) A few substances are arranged in the increasing order of 'forces of attraction' between their particles. Which one of the following represents a correct arrangement?
- a) Water, air, wind
 - b) Air, sugar, oil
 - c) Oxygen, water, sugar
 - d) Salt, juice, air
- 6) On converting 25°C, 38°C and 66°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
- 7) Choose the correct statement of the following
- a) Conversion of solid into vapours without passing through the liquid state is called vaporisation.
 - b) Conversion of vapours into solid without passing through the liquid state is called sublimation.
 - c) Conversion of vapours into solid without passing through the liquid state is called freezing.
 - d) Conversion of solid into liquid is called sublimation.
- 8) The boiling points of diethyl ether, acetone and n-butyl alcohol are 35°C, 56°C and 118°C respectively. Which one of the following correctly represents their boiling points in kelvin scale?
- a) 306 K, 329 K, 391 K
 - b) 308 K, 329 K, 392 K
 - c) 308 K, 329 K, 391 K
 - d) 329 K, 392 K, 308 K

- 9) 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
- 10) In which of the following conditions, the distance between the molecules of hydrogen gas would increase?
- a) Increasing pressure on hydrogen contained in a closed container
 - b) Some hydrogen gas leaking out of the container
 - c) Increasing the volume of the container of hydrogen gas
 - d) Adding more hydrogen gas to the container without increasing the volume of the container

- (a) (i) and (iii)
- (b) (i) and (iv)
- (c) (ii) and (iii)
- (d) (ii) and (iv)

11) A sample of water under study was found to boil at 102°C at normal temperature and pressure. Is the water pure? Will this water freeze at 0°C ? Comment.

12) A student heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Which of the following in the given figure would correctly represent the result? Justify your choice.



13) Fill in the blanks:

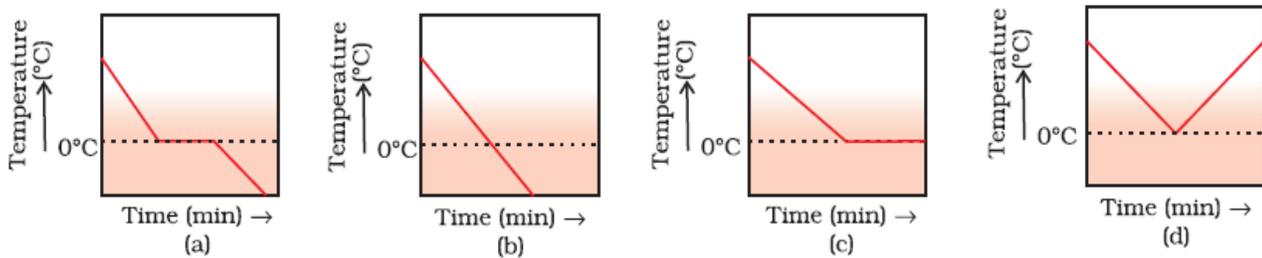
- a) Evaporation of a liquid at room temperature leads to a _____ effect.
- b) At room temperature the forces of attraction between the particles of solid substances are _____ than those which exist in the gaseous state.
- c) The arrangement of particles is less ordered in the _____ state. However, there is no order in the _____ state.
- d) _____ is the change of gaseous state directly to solid state without going through the _____ state.
- e) The phenomenon of change of a liquid into the gaseous state at any temperature below its boiling point is called _____.

14) Osmosis is a special kind of diffusion'. Comment.

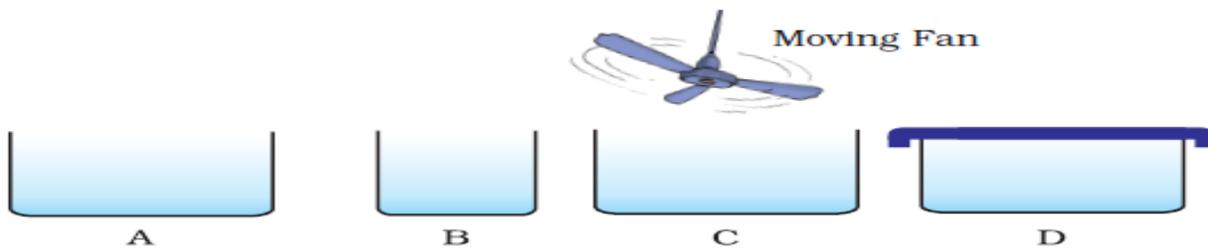
15) Classify the following into osmosis/diffusion

- a) Swelling up of a raisin on keeping in water.
- b) Spreading of virus on sneezing.
- c) Earthworm dying on coming in contact with common salt.
- d) Shrinking of grapes kept in thick sugar syrup.

- e) Preserving pickles in salt.
 - f) Spreading of smell of cake being baked throughout the house.
 - g) Aquatic animals using oxygen dissolved in water during respiration.
- 16) Water as ice has a cooling effect, whereas water as steam may cause severe burns. Explain these observations.
- 17) 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.
- 18) A glass tumbler containing hot water is kept in the freezer compartment of a refrigerator (temperature $< 0^{\circ}\text{C}$). 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.



- 19) Look at Fig. and suggest in which of the vessels A, B, C or D the rate of evaporation will be the highest? Explain.



- 20) a) Conversion of solid to vapour is called sublimation. Name the term used to denote the conversion of vapour to solid.
- b) Conversion of solid state to liquid state is called fusion; what is meant by latent heat of fusion? Fig. Moving Fan
- 21) You are provided with a mixture of naphthalene and ammonium chloride by your teacher. Suggest an activity to separate them with well labelled diagram.
- 22) It is a hot summer day, Priyanshi and Ali are wearing cotton and nylon clothes respectively. Who do you think would be more comfortable and why?

- 23) You want to wear your favourite shirt to a party, but the problem is that it is still wet after a wash. What steps would you take to dry it faster?
- 24) Comment on the following statements:
- a) Evaporation produces cooling.
 - b) Rate of evaporation of an aqueous solution decreases with increase in humidity.
 - c) Sponge though compressible is a solid.
- 25) Why does the temperature of a substance remain constant during its melting point or boiling point?