



CLASS – 9
CHAPTER – 1
MATTER IN OUR SURROUNDINGS

PREVIOUS KNOWLEDGE QUESTIONS

Ques 1. Name some substance you see all around you?

Ans. Water, Juice, Table, Chair, Fan etc.

Ques 2. What is the state of this substance?

Ans. Water – Liquid
Juices – Liquid
Table – Solid
Chair – Solid
Fan – Solid

Ques 3. What all these substance called as?

Ans. All these substance are known as matter.

NCERT QUESTIONS

Ques1. Which of the following is matter?

Chair, air, love, smell and taste, almonds, thought, cold, cold-drink smell of perfume.

Ans. Chair, almonds, air, cold drink and smell of perfume are matter.

Ques2. Give reason for the following observation:

The smell of hot sizzling food reaches you several meters away, but to get the smell from cold food you have to go close.

Ans. Particles of hot sizzling food possess large kinetic energy and diffuse in air rapidly and reaches several meters away where as, the particles of cold food possess less kinetic energy and aren't able to reach several meters away.

Ques3. A diver is able to cut through water in a swimming pool. Which property of matter does this observation show?

Ans. There are spaces in between the particles of water (matter).

Ques4. What are characteristics of the particles of matter?

Ans. a. All matter (elements or compounds) consists of very small particles which can exist independently and are called molecules.
b. The particles of matter are in a state of continuous motion and possess kinetic energy.
c. There are intermolecular spaces in between the particles (Molecules) of matter.
d. The particles of matter attract each other with a force called intermolecular force which is maximum in solids and least in the gases.



Ques5. The mass per unit volume of a substance is called density. Arrange the following in order of increasing density- air exhaust from chimneys, honey, water, chalk, cotton and iron.

Ans. Exhaust from chimneys, air, cotton, water honey, chalk and iron.

Ques6. a. Tabulate the differences in the characteristics of states of matter.

b. Comment upon the following: rigidity, compressibility, fluidity, filling a gas container, shape, kinetic energy and density.

Characteristics	Solids	Liquids	Gases
Rigidity	Highly rigid	Very less rigid	Not rigid
Compressibility	Negligible	Low	High
Fluidity	Do not flow	Flow from higher to lower level	Flow in all directions
Filling a container	Do not need container to contain them	Need container to contain them	Need container to fill them
Shape	Definite shape	Take the shape of the container	Not have definite shape
Kinetic energy	Least K.E.	More K.E. than solids	Maximum K.E
Density	Maximum density	Less than solids	Least density

Ques7. Give reasons for the following:

a. A gas fills completely the vessel in which it is kept.

b. A gas exerts pressure on the walls of the container.

c. A wooden table should be called a solid.

d. We can easily move our hand in air but to do the same through a solid block of wood we need a karate expert.

Ans. a. The molecules of a gas have very high kinetic energy and large inter molecular spaces and practically negligible intermolecular forces and thus fill entire space of the vessel.

b. When the molecules of a gas which are having high kinetic energy strike against the walls of container, they exert some force per unit area, i.e. pressure. Therefore, a gas exerts pressure on the walls of the container.

c. A wooden table is solid because:

i. It is rigid.

ii. It has definite shape and volume.

iii. It is not compressible.

iv. It has high density.

d. The molecules of a gas (air) have large inter molecular spaces and negligible inter molecular forces. Hence, we can easily move our hand in air, whereas the intermolecular spaces between the molecules of a solid are very small and intermolecular forces are very large. Hence a lot of force is needed to separate the molecules of a solid and we need karate expert to break a block of wood.



Ans. Water expands on freezing and leads to decrease in density. This means that for a given mass ice will have more volume as compared to liquid water thus being lighter (due to lower density), ice floats on water.

a. 300K

b. Temperature in $^{\circ}\text{C} = 573 - 273 = 300^{\circ}\text{C}$

a. 2500°C

b. 1000°C

b. Water is in liquid state at 1000°C .

Water can also exist in gaseous state at 1000°C , if constant heat energy is supplied at this stage.

Ans. During the change of state, heat is absorbed but this heat gets used up in changing the state by overcoming the forces of attraction between the particles. Thus there is no change in temperature although heat is being absorbed constantly.

Ans. By applying pressure and reducing temperature the atmospheric gases can be liquefied.

Ans. In a desert cooler, hot and dry air passes through wet pads of wood - wool. Water takes heat from the hot air and evaporates. The evaporation of water cools the pads and the circulating water. As a result, the incoming air also gets cooled.

Ans. An earthen pot has small pores in its walls. When water is poured into it, some of it seeps through these pores onto its outer surface. On reaching these, it evaporates. The heat required for evaporation is taken from the earthen pot and from the water in it. As a Result, the water in an earthen pot gets cooled down.

Ans. Acetone, petrol or perfume has very low boiling temperature. When we put some acetone or petrol or perfume on our palm, the particles of it gain energy from our palm and evaporate quickly which cause cooling.

Ques16. Why are we able to sip hot tea or milk faster a saucer rather than a cup?

ii. Inter molecules spaces and kinetic energy are very small. The molecules of iron almirah are held very tightly. The iron almirah has a definite shape and definite volume and thus it is a solid.

Ques6. Why is ice at 273K more effective in cooling than water at the same temperature?

Ans. Cooling takes place when heat is removed from a system. In case of ice at 00C, it will take heat (latent heat) from the medium to convert itself first into water at 00C and then into water at a higher temperature. In short, in case of ice at 00 C there will be a change in phase, whereas in case of water at 00 C there will be no change in phase. Hence lesser energy will be taken from the medium.

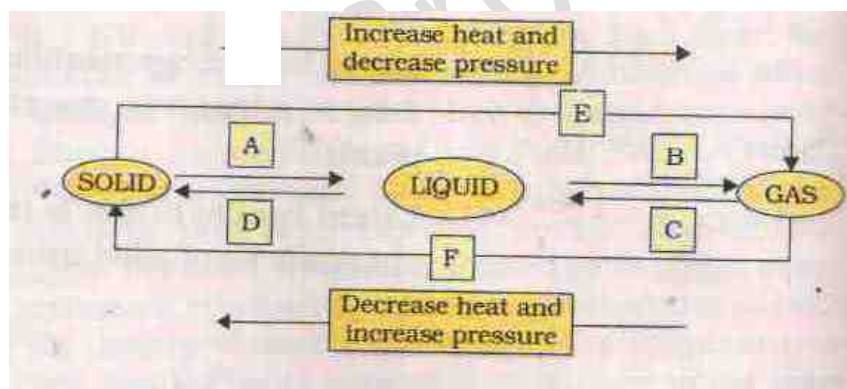
Ques7. What produces more severe burns, boiling water or steam?

Ans. Steam produces more severe burns; steam has the highest specific latent heat of vaporization whose value is 2260 KJ/kg. Thus 1 kg of steam at 100C contains 2260 KJ of more heat energy than 1 Kg. of water at 100C. It is this enormous amount of heat energy in steam which causes more severe burns.

Ques8. Name A, B, C, D, E and F in the following diagram showing change in its state.

Ans.

- A. Solid changes into liquid state by the process of melting or fusion
- B. Liquid state changes to gaseous state by the process of vaporization or boiling.
- C. Gaseous state changes to liquid state by the process of liquefaction or condensation.
- D. Liquid state change to solid by the process of freezing or solidification.
- E. Solid changes into gaseous state by the process of sublimation.
- F. Gas changes into solid state by the process of sublimation.



ACTIVITY

Prepare a model to demonstrate movement of particles in solids, liquids and gases. For making this model you will need.

- a. A Transparent jar
- b. A big rubber balloon or piece of stretchable rubber- sheet.
- c. A string
- d. Few chick- peas or black gram or dry green peas.

How to make?

- Put the seeds in the jar
- Sew the string to the center of the rubber sheet and put some taps to keep it tied securely.
- Stretch and tie the rubber sheet on the mouth of the jar.

Your model is ready. Now run your fingers up and down the string by first tugging as it slowly and then rapidly.

ACTIVITY 1

OBJECTIVE

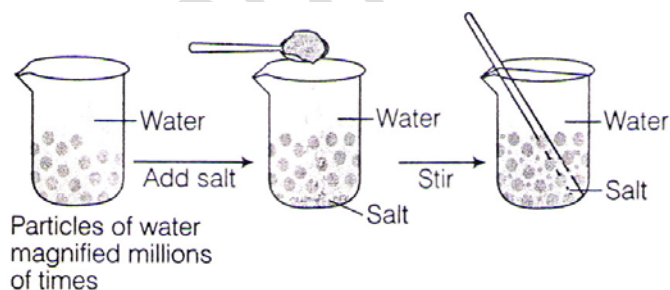
To prove that matter is made up of tiny particles (and have intermolecular space).

MATERIALS REQUIRED

Beaker, water, salt or sugar, glass rod and marker.

Procedure

- Take a 100 mL beaker half-filled with water and mark the initial water level with the help of a marker.
- Then, add a teaspoonful of sugar (or salt) to it and stir it with the help of the glass rod.
- Mark the water level after the disappearance of the solute.



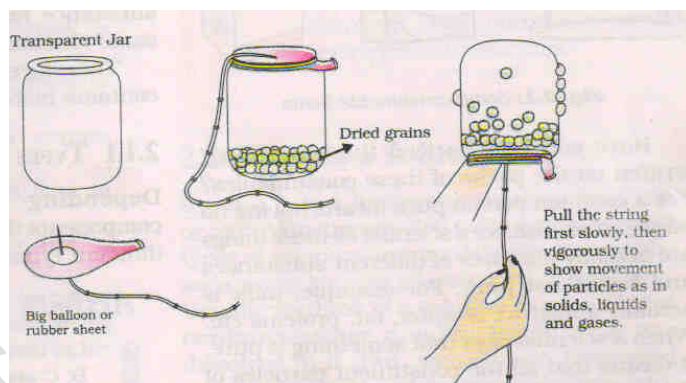
When we dissolve salt in water the particles of salt get into the spaces between particles of water

OBSERVATION

Water level does not change.

EXPLANATION

As matter is composed of very tiny invisible particles and have intermolecular spaces. When salt is dissolved in water, the particles of salt get into the spaces between the particles of water.





CONCLUSION

Matter is made up of tiny particles and intermolecular spaces are present in between them.

CHECK?

Ques 1. What happens to the sugar when it is dissolved in water?

Ans . When sugar is dissolved in water, its crystals separate into very fine particles.

Ques 2. Where does the sugar go?

Ans. The sugar particles go into the spaces present between the particles of water and mix with them to form sugar solution.

Ques 3. What information do you get about the nature of matter from the dissolution of sugar in water?

Ans. The dissolution of sugar in water tells that

- (i) The matter (sugar and water) is made up of small particles.
- (ii) The particles of matter (water) have spaces between them.

Ques 4. Is there any change in water level after dissolving sugar/salt in it?

Ans. There is no change in water level after dissolving sugar/salt in it.

ACTIVITY 2

OBJECTIVE

To prove that particles of matter

1. Are very small in size (particulate nature).
2. Move (diffuse) faster in gaseous state as compared to solid or liquid states.
3. Diffuse at a slower rate, if density is more.
4. Diffuse faster at a higher temperature.

MATERIALS REQUIRED

Potassium permanganate, water, beakers, perfume, copper sulphate etc.

OBSERVATION TABLE



CREATING LEADERS

Step	Experiment	Observation	Inference
1.	(i) Take 100 mL of water in a beaker and add 2-3 crystals of potassium permanganate to it. (ii) Transfer 10 mL of the above the colour becomes lighter in the after too much dilution, a slight shade of color solution in another beaker and second beaker, still remains in the solution. Add 90 mL of clear water to it. (iii) Repeat the above step thrice i.e. dilute the solution as above.	The colour of the solution is quite dark. The colour becomes lighter in the second beaker. The colour of the solution becomes lighter each time.	After too much dilution, a slight shade of colour still remains in the solution. It shows that particles are too much small in size.
2.	(i) Take a bottle of perfume. Smell it when it is closed. (ii) Spray some perfume opening the bottle	No smell is obtained. A strong smell is obtained.	Particles of perfume reach in the gaseous state and diffuse fastly in air.
3.	Take equal amount of water in two beakers. Add a drop of blue ink in the first and a drop of honey in the second. Do not stir and keep these beakers undisturbed for a few hours.	Ink diffuses in water and the solution becomes blue in first beaker in a short time to diffuse honey in the second beaker.	As the density of ink is less than that of honey, the rate of diffusion (movement of particles) is faster in the former case than in the latter.
4.	Dissolve a crystal of copper sulphate in two beakers-one containing hot water and other the cold water. Do not stir the solution.	The rate of dissolution is faster in hot water in the cold water.	Higher is the temperature, faster is the movement of matter.

CHECK?

Ques 1. What conclusion can you draw after adding 2-3 crystals of KMnO_4 in water?

Ans . After the addition of 2-3 crystals of KMnO_4 in water, it is concluded that a crystal of KMnO_4 is made up of millions of tiny particles. They keep dividing themselves into smaller particles.

Ques 2. When someone opens a bottle of perfume in one corner of a room, its smell spreads in the whole room quickly. Why?

Ans. This happens because the particles of perfume (gas) move rapidly in all the directions and mix with the moving particles of air in the room. They do so by getting into the spaces between the air particles.



Ques 3. Why honey instep 3 dissolves at a slower rate?

Ans . In step 3, honey dissolves at a slower rate because it is more viscous and has strong intermolecular forces of attraction.

Ques. 4. From step 4, write the effect of temperature on diffusion.

Ans. Diffusion becomes faster at a higher temperature.

Ques. 5. In which states, diffusion is applicable?

Ans. Diffusion is applicable to gaseous and liquid states.

HOTS QUESTIONS

Ques. 1. Some substances cannot exist in the gaseous state; others cannot exist in the liquid state, and some cannot exist either in the gaseous or the liquid state. Giving suitable examples justify the above statement.

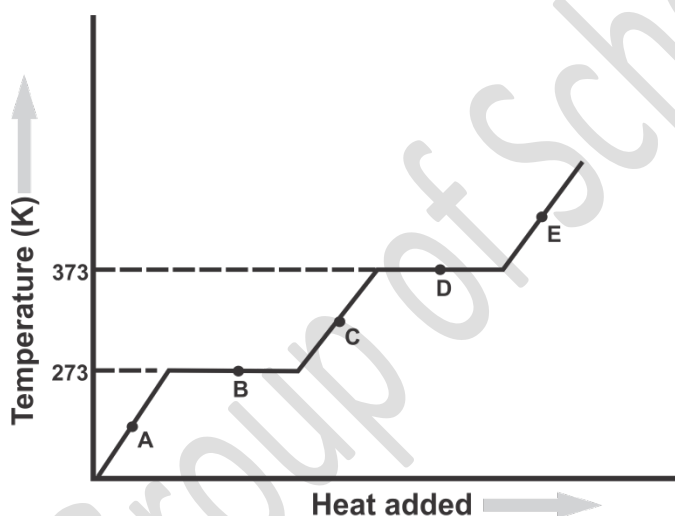
- (a) What is the physical state of the substance at points A, B, C, D and E.
- (b) What is the melting point of the substance?
- (c) What is the boiling point of the substance?
- (d) What happens to the temperature when the substance is changing its state?
- (e) Can the given substance be ice at point A?

Ans. Substance that cannot exist in the gaseous state. For example, consider sugar. On heating, it melts to form a liquid state. On further heating to higher temperatures, sugar does not become gaseous but instead decomposes into a number of products that contain carbon.

Substance that cannot exist in the liquid state. For example, ammonium chloride. On heating, it undergoes sublimation, i.e., it directly gets converted into the gaseous state without passing through the intermediate liquid state.

Substance which cannot exist in the liquid or the gaseous state. For example, calcium carbonate is a solid. On heating, it cannot be melted or vaporized because it decomposes into calcium oxide which is another solid, and carbon dioxide which is a gas.

Ques. 2. The heating curve of a pure substance at one atmosphere pressure is shown in Fig. 1.21.



Ans. (a) At point A, the substance is in the solid state; at point B, it exists both in the solid as well as in the liquid state. At point C, the substance exists as a liquid; at point D, it exists both as

a liquid as well as a gas while at point E, it exists only as a gas.

(b) The mp. of the substance is 273 K.

(c) The h.p. of the substance is 373 K.

(d) During the phase change, from solid to liquid or from liquid to gas, the temperature remains constant.

(e) From melting point and boiling point, the substance appears to be water.

UNSOLVED HOTS

Ques 1. Ordinary water boils at 100°C Can it be made to boil at 95°C or 105°C ?

Ques 2. What is the difference between a gas and a Vapor?



Ques 3. Two cubes of ice are pressed hard between the palms, when the pressure is released, the two cubes join together. Explain?

VALUE BASED QUESTIONS

Ques. 1. Shelly and her mother went to a shop to buy some cooling equipment for her house to beat the summer heat. The shop keeper showed them two types of cooling equipments—a desert cooler and an all-weather air conditioner. The desert cooler was much cheaper than the air conditioner. Shelly's mother wanted to buy the desert cooler as it was much cheaper.

Now answer the following questions:

- (i) As a student of science, why would you suggest to Shelly's mother to buy the expensive air conditioner? Give two reasons.**
- (ii) What are the values associated with the above decision?**

Ans. (i) The two reasons are:

(a) Desert cooler works efficiently only on dry summer days when the temperature of the atmosphere is high and humidity of air is low. Both these factors increase the rate of evaporation of water and thus enormous cooling is produced. However, during rainy days, the temperature of the atmosphere is little low but the humidity of air is quite high. As a result, rate of evaporation is slow and sufficient cooling is not produced.

(b) In contrast, an air conditioner works efficiently both on dry summer days as well as on hot and humid rainy days since it not only cools the air by repeated evaporation and condensation of the chemical Freon (enclosed in the air conditioner) but also increases the humidity on dry summer days and decreases the humidity on rainy days to an optimum level which makes us feel comfortable.

Furthermore, all weather air conditioners not only control the humidity but also increase the temperature to a suitable comfortable level by blowing hot air during cold winter days.

(ii) Desert coolers provide the breeding ground for mosquitoes which spread malaria and the fatal disease dengue. Further, due to hot and humid conditions, rusting of desert cooler occurs within 2/3 years and hence periodic painting of the cooler becomes necessary.

In view of the above facts, it is wise to choose sustained long term benefit than short term benefit w.r.t. to comfort and money.

Q. 2. In cold countries where large amount of snow falls during winter season, the roads are cleared of snow by sprinkling either common salt (sodium chloride) or magnesium chloride or calcium chloride or a mixture of these. Since these chemicals have damaging effect on the



environment, therefore, potassium acetate is preferred.

Now answer the following questions:

- (i) How does common salt or magnesium chloride (or calcium chloride) help in clearing snow from roads?
- (ii) At what temperatures, common salt and at what temperatures, magnesium chloride or calcium chloride is effective?
- (iii) Discuss the damaging effects of these chemicals on the environment and how does the use of potassium acetate remove these damaging effects?

Ans. (i) Impurities lower the melting point. Thus, when common salt or magnesium chloride (or calcium chloride) is added to snow, its melting point decreases. As a result, snow melts and the water thus formed flows down thereby clearing snow from the road.

(ii) The effectiveness of common salt depends upon temperature. A 10% solution of salt is effective upto approx. -6°C while a 20% solution is effective upto approx. -16°C . At temperatures lower than -16°C , more expensive magnesium chloride (or calcium chloride) is used.

(iii) It is the chloride ions which do much of the environmental damage. These ions dehydrate plants, kill small aquatic organisms and reduce water circulation in lakes which tend to dissolve air in the water. Therefore, potassium acetate which does not contain chloride ions is used. At the same time, potassium provides the necessary nutrient to the organisms.

Board Questions

Ques 1. How change in temperature and humidity effects the rate of evaporation? [CCE 2014]

Ans. The rate of evaporation increases on increasing the temperature of the liquid. When the temperature of a liquid is increased by heating, more particles of the liquid get enough kinetic energy to go into Vapour state. This increases the rate of evaporation. When the humidity of air is low, then the rate of evaporation readily. When the humidity of air is high then the rate of evaporation is low and water evaporates very slowly.

Ques 2. (i) Explain the term density. Arrange different states of matter in increasing order of density.

(iii) Explain how ice-floats on water. [CCE 2014]

Ans. (i) The mass per unit volume of a substance is called density. Density depends upon the volume of the substance. Substance with small intermolecular spaces have large volumes and high densities. The increasing order of intermolecular spaces between the different states of matter are solid < Liquid < gas. Thus the increasing order of their density would be gas < Liquid < solid.



CREATING LEADERS

(ii) Ice has cage like structure, i.e, when water freezes to form ice, a number of empty spaces are created. As a result, volume increases from the same mass of water. In other words, mass per unit volume or density of ice is lower than that of water hence ice floats over water.

Ques 3. Why does our palm feel cold when perfume is poured on it? [DAV 2004]

Ans. It is because perfume gets evaporated by taking heat from palm which causes cooling.

Ques 4. What is Bose-Einstein condensate? [KVS 2005]

Ans. It is fifth state of matter. It is obtained by cooling a gas of extremely low density to super low temperature.

Ques 5. What is plasma? [DAV 2004]

Ans. It is mixture of free electrons and ions. It is fourth state of matter.

Ques 6. Why do sun and stars glow? [KVS 2005]

Ans. It is due to presence of plasma in them.

Ques 7. How is plasma produced? [KVS 2007]

Ans. It can be produced by passing electricity through gases at very low pressures taken in discharged tube.

Ques 8. How does fluorescent tube glow?

Ans. When electricity is passed through a fluorescent tube, the gases present in them get ionised to form plasma which makes it glow.

Ques 9. What is matter? Write the names of the mixture used? [KVS 2007]

(a) by all living beings and (b) in construction of buildings

Ans. Matter is a substance which has mass and occupies space.

(a) Air (b) Steel.

Ques 10. Change the following Celsius temperature to Kelvin scale. [KVS 2005]

(a) -273°C (b) -100°C (c) -40°C (d) $+30^{\circ}\text{C}$

Ans. (a) $-273^{\circ}\text{C} + 273 = 0\text{K}$ (b) $-100^{\circ}\text{C} + 273 = 173\text{K}$

(c) $-40^{\circ}\text{C} + 273 = 233\text{K}$ (d) $+30^{\circ}\text{C} + 273 = 303\text{K}$

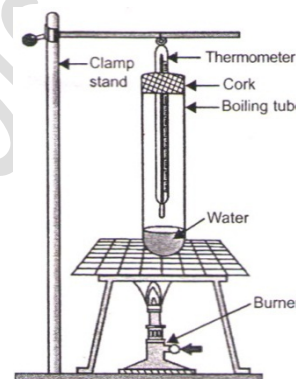
Ques 11. Give two factors which increase the rate of evaporation. [DAV 2006]

Ans. (a) Temperature (b) Wind speed.

Ques 12. How will you determine the boiling point of water experimentally? Draw a neat and labelled diagram. [DAV 2004]

Ans.

1. Take 5 ml of water in a boiling tube fitted with cork and thermometer as shown in
2. Heat the water in the boiling tube with the help of a burner till water starts boiling.





3. Note down the temperature at which water starts boiling.
4. Keep a close look on the thermometer reading till most of the water has vapourised.
5. Record your observations for the conversion of water in liquid state to vapour state.

Ques 13. When a solid melts, its temperature remains the same, why? [DAV 2009]

Ans. It is because solid takes heat of fusion from surroundings, that is why temperature remains constant.

Ques 14. What is full form of CNG? Mention its one property which makes it so important [DAV 2009]

Ans. Compressed Natural Gas. It does not create pollution.

Ques 15. How does water of our body keep us cool? [DAV 2009]

Ans. Water present in body absorbs heat and comes out as sweat. Due to evaporation of sweat, keep us cool.

Ques 16. Distinguishing between three states of matter on the basis of [MSE 2009]

- (a) Number of free surface/intermolecular forces
- (b) Packing of molecules
- (c) Rigidity

Ans.

Solids	Liquids	Gases
(a) Solids have maximum inter-molecular forces of attraction. (b) The molecules are closely packed. (c) They are rigid and cannot flow.	(a) Liquids have lesser inter-molecular force of attraction. (b) Molecules are less closely packed than solids (c) They are fluid and can flow from higher level to lower level.	(a) Gases have least inter-molecular forces of attraction. (b) Molecules are far away from each other (c) They flow in all directions.

Ques 17. Write one important characteristic property of particles of matter. [NCT 2009]

Ans. The particles of matter attract each other.

Ques 18. Why do people in villages use earthen pots in summer to cool water? [DAV 2008]

Ans. It is because earthen pot has pores through which water comes out. It gets evaporated which causes cooling.

Ques 19. Sponge is solid but still it can be compressed, why? [DAV 2008]



Ans. It has air filled in the pores, therefore, it can be compressed.

Ques20 . Give reason: [MSE 2008]

- (a) Naphthalene balls disappear with time without leaving any solid.
- (b) A gas exerts pressure on walls of container

Ans. (a) Naphthalene balls undergo sublimation i.e., change into vapours completely without change

in liquid and leaving no residue. .

(b) Gas molecules collide with each other and also walls of container therefore exert pressure.

Ques 21. Arrange the following substances in increasing order of force of attraction between the particles [NCT 2008]

- (a) milk (b) salt (c) oxygen

Ans. Oxygen, milk, salt is increasing order of force of attraction.

Ques 22. Which produces serious burns, boiling water or steam? Give reason. [NCT 2008]

Ans. Steam has latent heat of vapourisation, therefore, it causes serious burns.

Ques 23. Name the term used for [DAV 2007]

- (a) Solid directly formed from gas.
- (b) Gas directly formed from solid.

Ans.(a) Solidification (like in process of sublimation)

(b) Sublimation.

Ques 24. What is sublimation? Write the names of two substances which can sublime? [NCT 2007]

Ans. It is process in which solid gets converted into vapours directly without change into liquid e.g., Naphthalene, iodine can sublime.

Ques 25. Convert the following thermometer readings into Kelvin —100°C, 200°C [KVS 2007]

Ans. $-100^{\circ}\text{C} + 273 = 173\text{ K}$

$200^{\circ}\text{C} + 273 = 473\text{ K}$

Ques 26. Why does all the water of the earth not get evaporated during hot summer days?

Ans. It is because molecule of water at surface has sufficient kinetic energy to change into vapours at temperature $40 - 45^{\circ}\text{C}$ in summers. All the water will get evaporated at 100°C only.

Ques 26. Can we solidify a gas? Name the gas and method used. What is special name given to it?

Ans. Carbon dioxide can be solidified by applying high pressure at low temperature. It is called 'Dry ice'.

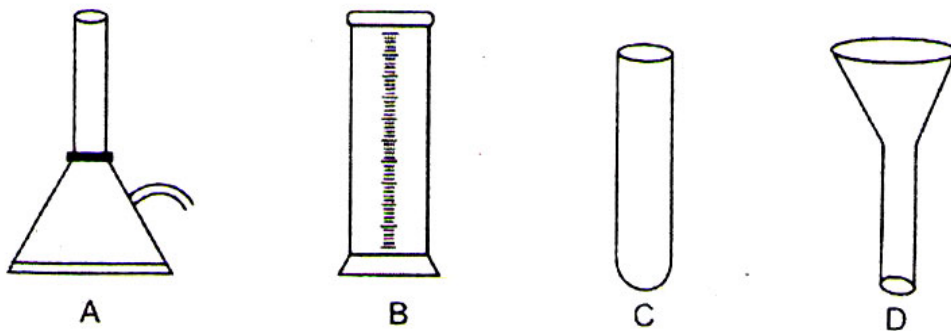
Ques 27. What happens when dry ice is left in open atmosphere? Name the process.

Ans. Dry ice is solid CO_2 . It will change into $\text{CO}_2(\text{gas})$ at room temperature. The process is called sublimation.

Multiple Choice Questions (Based on Practical Skills)

1. To separate the components of a mixture of sand, common salt and ammonium chloride (or camphor) by sublimation

Ques 1 . In the diagram, test tube, graduated cylinder, burner and funnel are respectively shown by



(a) A, B, C, D

(b) C, B, A, D

(c) C, B, D, A

(d) C, A, B, D

Ans.(b)

Ques 2. A mixture of sand, common salt and camphor. The substance(s) which get(s) separated by sublimation is/are

(a) Sand and camphor (b) Common salt only (c) Camphor only (d) Common salt and camphor

Ans.(c)

Ques 3. Which one of the following cannot be separated by sublimation?

(a) Common salt (b) Ammonium chloride (c) Camphor (d) Iodine

Ans.(a)

Ques 4. In a mixture of common salt, sand and ammonium chloride, first step of separation is

(a) Filtration (b) Crystallization (c) Sedimentation (d) Sublimation

Ans. (d)

Ques 5. Out of the following the substance which can be separated from a mixture by sublimation

- (a) Sugar powder (b) Camphor (c) Common salt (d) Chalk

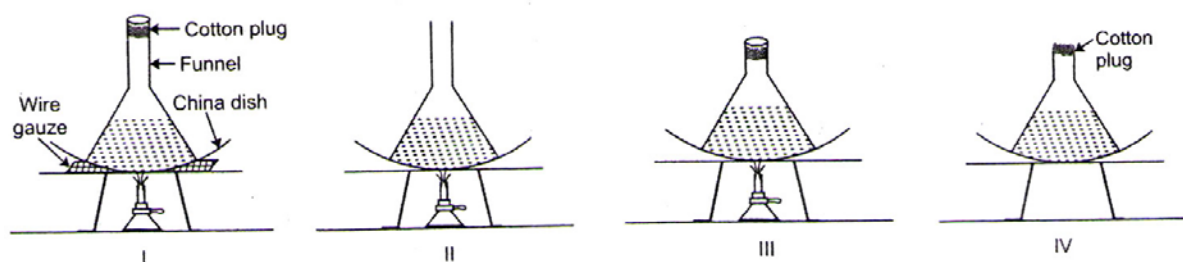
Ans. (b)

Ques 6. The mixture of sulphur and sodium chloride can be separated by

- (a) Dissolving in water followed by filtration and evaporation of filtrate
(b) Sublimation
(c) Dissolving in alcohol followed by filtration
(d) Crystallization

Ans.(a)

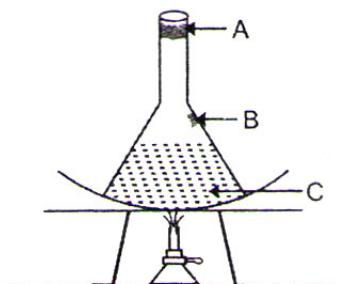
Ques 7. Which of them correctly represents sublimation?



- (a) I (b) II (c) III (d) IV

Ans. (a)

Ques 8. In figure, identify the place at which you can find only pure NH_4Cl after heating



- (a) B (b) C (c) A (d) A and B

both

Ans. (d)

Ques 9. The aqueous mixture of salt and sand can be separated by the following method

- (a) Filtration (b) Sublimation (c) Condensation (d) Melting

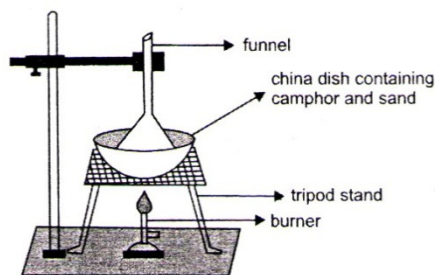
Ans.(a)

Ques 10. A student takes a mixture of sand and ammonium chloride in a china dish and heats it under a funnel fitted with a plug over a flame. He would observe that.

- (a) Solid sand gets deposited on the lower cooler parts of the funnel while solid ammonium chloride remains in the china dish.
(b) Sand and ammonium chloride gets deposited on hotter parts of the funnel.
(c) Ammonium chloride gets deposited on the cooler parts of the funnel and sand remains in the china dish.
(d) Sand collects on cooler parts of the funnel while ammonium chloride melts in the china dish.

Ans. (c)

Ques 11. The set-up given below is used in the separation of camphor from a mixture of camphor and sand.

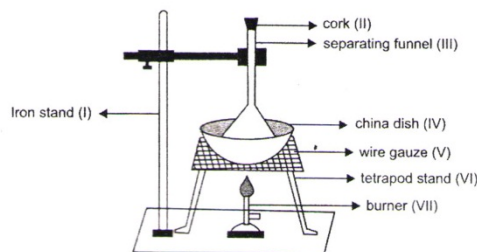


The item missing in this set up is:

- (a) Thermometer (b) Cotton plug
(c) Two holed cork (d) One holed cork

Ans.(b)

Ques 12. A student does the labelling, indicated below, for the apparatus used for separating a mixture of camphor and sand.



The parts that have been incorrectly labelled are

- (a) I, II, VII (b) III, IV, V
(c) 11, 111, VI (d) VII, V, I

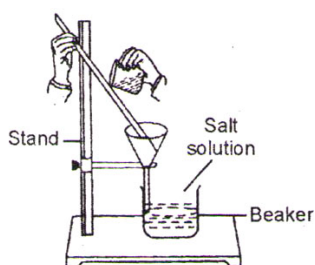
Ans.(c)

Ques 13. A china dish containing a mixture of ammonium chloride, common salt and fine sand, is covered with an inverted glass funnel having a cotton plug at its tube end. A student heats this dish strongly. He would observe that on the inner sides of the funnel gets condensed

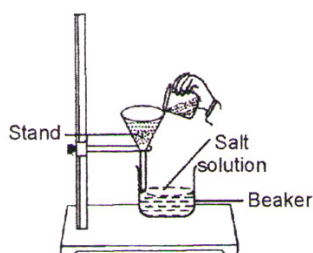
- (a) A greenish yellow gas (b) A colourless gas
(c) Dense white fumes (d) Colourless fumes

Ans.(c)

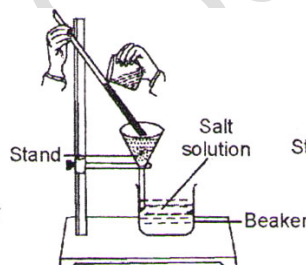
Ques 14. Four students were asked to separate sand from salt by dissolving in water and then filtration. Which of the following is correct method?



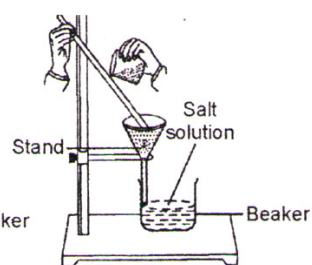
(a) A



(b) B



(c) C



(c) C

Ans. (a)

Ques 15. A teacher gave an impure sample of alum containing fine sand as impurity to a student. He asked him to recover pure alum from this sample. The correct procedure to be followed would be to

- (a) dissolve the impure sample of alum in water, filter and evaporate the filtrate
(b) dissolve the impure sample of alum in alcohol and filter
(c) move a magnet over the impure sample of alum
(d) dissolve the impure sample of alum in carbon disulphide, filter and evaporate the filtrate to dryness

Ans. (a)

2 To determine the melting point of ice and the boiling point of water

Ques 1. During melting of ice the temperature

Ans.(c)



- (a) Increases decreases (b) Decreases (c) Remains the same (d) First increases then decreases

Ques 2. When common salt is added to ice its melting point is

Ans.(a)

- (a) Less than 0°C (b) More than 0°C (c) More than 10°C (d) Less than -50°C

Ques 3. At room temperature (30°C) a student sets up an apparatus to determine the melting point of ice.

He takes a beaker half filled with ice and dips a thermometer in it. The correct observation is

Ans.(b)

- (a) Temperature falls and becomes, constant at -4°C
(b) Temperature falls and becomes constant at 0°C till whole ice melts
(c) Temperature falls and ice starts melting with increase in temperature
(d) Temperature keeps on falling till -4°C , then it starts increasing.

Ques 4. When all ice floating in water melts the level of water in the container.

Ans.(c)

- (a) Falls (b) Rises (c) Remains unchanged (d) First rises, then falls

Ques 5. Boiling point of water is

Ans.(d)

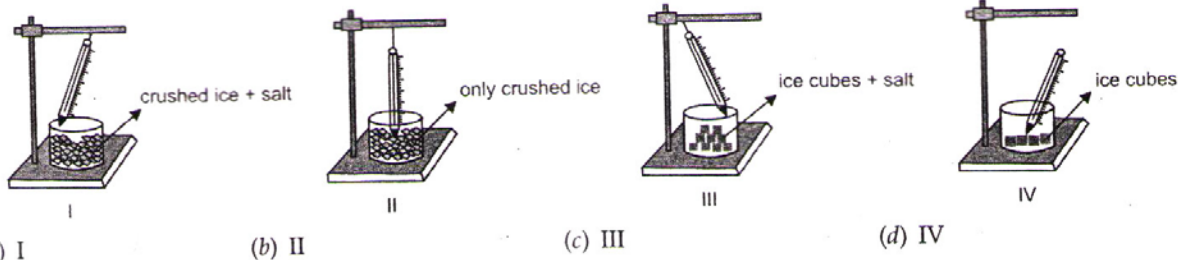
- (a) 100°C (b) 373 K (c) 273.16 K (d) (a) or (b) .

Ques 6. A student takes some water in a beaker and heats it over a flame for determining its boiling point. He keeps on taking its temperature readings. He would observe that the temperature of water.

Ans.(d)

- (a) keeps on increasing regularly (b) keeps on increasing irregularly
(c) first increases slowly, then decreases rapidly and eventually becomes constant
(d) first increases gradually and then becomes constant

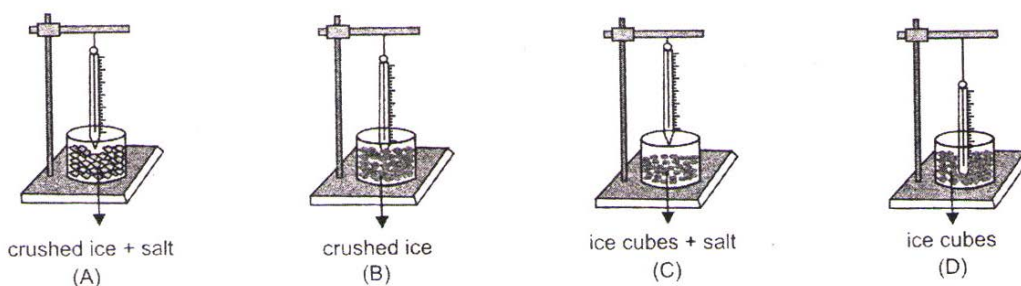
7. Which of the following experimental arrangements is correct for determination of melting point of ice?



Ans. (b)

(a) I (b) II (c) III (d) IV

Ques 8. Out of the following, the preferred experimental arrangement for determination of the melting point of ice, is the arrangement shown in figure:



Ans. (b)

(a) (A) (b) (B)
(c) (C) (d) (D)

9. The boiling point of sea water is

Ans. (b)

(a) 373 K (b) >373K
(c) 273 K (d) 100°C

10. Liquid 'A' boils at 50°C and liquid 'B' at 100°C, which of them be more volatile

Ans. (a)

(a) 'A' (b) 'B'
(c) Both 'A' and 'B' (d) None of these

11. When liquid boils in open container

Ans.(c)

(a) The vapour pressure of liquid is more than atmospheric pressure
(b) The vapour pressure of liquid is less than atmospheric pressure
(c) The vapour pressure of liquid is equal to atmospheric pressure
(d) All of these



12. While determining the melting point of ice, the thermometer

Ans.(c)

- (a) Should dip into ice and touch the bottom of container
- (b) Should remain above the ice
- (c) Should dip into ice but should not touch the container
- (d) Should be well above the ice

13. When we determine the boiling point of liquid, the thermometer

Ans.(b)

- (a) Should dip into liquid
- (b) Should be above the liquid and remain vertical
- (c) Should touch the bottom of container
- (d) Should be placed slanting in the liquid

14. Which of the following is correct for water?

Ans.(a)

- (a) AB represents melting, CD represents boiling
- (b) AB represents boiling, CD represent melting
- (c) AB represents melting, BC represent boiling
- (d) BC represents melting, CD represents boiling

