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Class 6 Chemistry lesson 2

Element , compounds and mixtures

Answer the following question in short.

1. Name two process involved in distillation process.

Ans. Distillation involves two process evaporation (boiling)followed by condensation.

2. Give an example of mixture that can be separated using the winnowing method.

Ans. The husk is separated from wheat grains by the method of winnowing.

3. Give examples of some elements which have more than one valencies.

Ans. Calcium (ca) , Zinc (Zn)

Boron(Br) , aluminium (Al) , carbon(c) , silicon (si).

4. Write the formulas for the following compounds.

- a) zinc chloride
- b) lead oxide
- c) Iron sulphide
- d) Ammonia

Ans.a)Zncl₂

b)Pbo

c)Fes

d)Nh₃

5. Which method is used for the separation of scarp iron from the heap of waste materials?

Ans. Magnetic separation.

6. What is evaporation ?state one large scale use of the process of evaporation.

Ans. The conversion of a liquid into vapour is called evaporation .salt obtained from sea water by the process of evaporation on large scale.

7. A cup of tea is said to be a mixture. Name its various components.

Ans. A cup of tea is said to be a mixture the solid substance left Behind on the filter paper is called Residue. The clear liquid obtained is called filtrate.

8. Name the method which can be used to separate:

- a) sand and water from their mixture.
- b) Iron nails from saw-dust

Ans.a) filtration.

b) magnetic separation.

9. Which of the following elements will form divalent ions?

Aluminium, barium ,potassium, hydrogen, zinc, calcium ,beryllium.

Ans . Zinc, calcium ,beryllium.

10. What are the characteristics of a mixture?

Ans. Characteristics of a mixture are:

1. A mixture can be separated into its constituents by physical process.
2. A mixture shows the properties of all the constituents present in it.
3. In a mixture the constituents can be present in any proportion.
4. A mixture does not have a definite melting point and boiling point.

11. Air is a mixture and water is a compound explain.

Ans. Mixture as in it has different types of gases mixed in the air such as Nitrogen, Oxygen and Carbon dioxide. But none of these are bonded or fused together. Water is a compound of one Oxygen and two hydrogen molecules bonded together permanently together.

12. Write symbols for the following elements.

- a) Chlorine
- b) Calcium
- c) Beryllium
- d) Bromine
- e) Platinum

Ans. a) Cl

- b) Ca
- c) Be
- d) Br
- e) Pt

13. Name two metals that are soft.

Ans. Sodium, Potassium.

14. Which method is used for separation of large particles and pebbles from sand at construction site?

Ans. Sieving is used for separation of large particles in Bubbles from sand at construction site.

15. Write the names of the method used for separation of components from following mixtures.

- a. Oil and water
- b. Chalk and water
- c. Pebbles and pulses
- d. Iron and sand
- e. Grains from stalk

Ans. a. separating funnel

- b. Filtration
- c. Hand picking
- d. Magnetic separation
- e. Threshing

Answer the following questions in detail.

1. Differentiate the following:
 - a. Sublimation and evaporation
 - b. Mixture and compound
 - c. Threshing and winnowing
 - d. Homogeneous and heterogeneous mixture
 - e. Atomicity and valency
 - f. Filtrate and Residue
 - g. Metals and non-metals

Ans.a. **sublimation**: sublimation is the phase transition from solid to gas.

Evaporation: evaporation is the phase transition from liquid to gas.

b. **Atomicity**: Atomicity is the number of atoms present in a molecule. Atomicity explains a molecular property.

Valency: valency is the maximum number of electrons that an atom has to lose, gain or share in order to get stabilized. Valency describes an elemental property.

c.**Mixtures**: mixtures can be separated easily. Mixture have the properties of the substances present in it. A mixture can contain elements in any proportion.

Compound : compounds cannot be separated. Compound do not have the properties of the elements. A compound always contain the elements in fixed proportion.

d. **Threshing**: threshing is done by beating the sheaves against the wooden bars to separate the grains from the stalk.

Winnowing: winnowing is the process of removing the unwanted husk from the grains .It is done by pouring the grains from a height on a windy day when the grains fall on the ground and chaff is blown away.

e)**Homogeneous mixtures**: homogeneous mixtures have uniform composition through out the mixture . Components cannot be separated easily.

Heterogeneous mixtures: heterogeneous mixture have composition which may vary from point to point. Components can be separated easily.

f)**Filtrate**: filtrate is the liquid of solution that has passed through a filter and which has been separated from the filtride.

Residue: Residue is whatever remains after something else has been removed while filtrate.

g) **Metals**: good conductor of heat and electricity . can be beaten into thin sheets. Can be stretched into wires . Solid at room temperature.

Non metals: poor conductor of heat and electricity. Brittle if solid. Non Metals are non ductile. It may be in solid liquid or gas form at room temperature.

2. Explain the following

a. **Pure substances**: substances which are made up of only one kind of particles.

b. **Element** : substances which are made up of only one kind of atoms.

c. **Metalloids:** The elements which show some properties of metal in some other properties of nonmetals are called metalloids.

d. **Crystallization:** process of cooling a hot concentrated solution of a substance to obtain crystals.

e. **Centrifugation:** centrifugation is a method for separating the suspended particles of a substance from a liquid in which the mixture is rotated at a high speed in a centrifuge.

f. **Distillation:** process of heating water to form water vapour and then cooling the hot water vapour to get back liquid water.

3. What is the need of separation of components of a mixture ?

Ans. Need of separation of components of a mixture.

The mixture are separated into their components for various purposes such as:

1. To remove an undesirable component.
2. To remove a harmful component.
3. To obtain the pure sample of a substance.
4. To obtain a useful component.

4. Explain monovalent ,divalent and trivalent elements. give examples.

Ans. Elements which have valency 1 are called monovalent. Divalent and elements have valency

2. Elements with valency 3 are called trivalent.

Example of monovalent elements are hydrogen, Lithium, Sodium, Potassium.

Examples of divalent elements are calcium, zinc ,magnesium ,oxygen.

Example of trivalent elements are Boron and Aluminium.

5. Explain the process used for separation of a mixture of salt and ammonium chloride.

Ans.AIM: to separate a mixture of common salt and ammonium chloride.

MATERIAL REQUIRED: a beaker, a funnel, a wire gauze ,a tripod stand, ammonium chloride, common salt cotton wool and a bunsen burner.

PROCEDURE:

1. Take the mixture of common salt and ammonium chloride in a beaker.
2. Cover the beaker with funnel inverted over the beaker.
3. Plug the tale of the funnel with the Cotton.
4. Hit the mixture and record your observation.

OBSERVATION : white fumes are observed along the cooler upper part of the funnel while common salt remains in the beaker.

INFERENCE: ammonium chloride sublimates on heating whereas common salt does not. This is a mixture of Ammonium Chloride and common salt can be separated by the process of sublimation.

(draw the figure 2.10 in your copy page number 33)

BOOK WORK:

choose the correct option:

1. How many elements are known at present?

Ans.b)118

2. Which of the following is correctly matched?

Ans.b)salt-compound.

3. Which of the following is the correct symbol of lead?

Ans. c)PB

4. Which of the following is the correct formula of calcium oxide?

Ans.c)CaO

5. Which of the following method is used for getting pure sugar?

Ans.b) crystallization

6. Which of the following method is used for separation of suspended particles from a solid liquid mixture?

Ans.c) centrifugation

7. Common salt is recovered by seawater by the process of

Ans.d) evaporation

8. Pure copper sulphate can be obtained from an impure sample by the process of

Ans.d) crystallization

9. Who among the following suggested a simple system of representing elements by symbols?

Ans.b) Baron Jon's Jacob Berzelius

FILL IN THE BLANKS.

1. Pure substance cannot be separated into two or more simplified absences by chemical methods.
2. Latin name of sodium is natrium.
3. Atomicity of O₃ molecule is 3.
4. Sugar and sand forms a heterogeneous mixture.
5. Camphor sublimes on heating.
6. In loading process, alum gets deposited to the suspended particles and make them heavy and settle down rapidly.
7. The combining capacity of an element is known as its valency.

Write T for true and F for false statements.

1. Sodium and potassium are hard metals. F
2. Boron and Germanium are non metals. F
3. CO₂ is the chemical formula of carbon monoxide. F
4. Atomic city is the combining capacity of atoms of an element. T
5. A mixture shows the properties of all the constituent present in it. T
6. In filtration process the solid left on the filter paper is called filtrate. F

Match the following.

- | | |
|-------------|-------|
| 1. Tungsten | a. W |
| 2. Mercury | b. Hg |
| 3. Sodium | c. Na |
| 4. Silver | d. Ag |
| 5. Gold | e. Au |