

## Separation of Substances

**Fill in the blanks: -**

1. Wood is a mixture of \_\_\_\_\_ and \_\_\_\_\_.
2. \_\_\_\_\_ - is a temperature at which a solid becomes a liquid.
3. Change in the composition of a \_\_\_\_\_ changes its \_\_\_\_\_ and \_\_\_\_\_ point.
4. A solution is formed when a \_\_\_\_\_ dissolves in water.
5. Several \_\_\_\_\_ materials from our body are dissolved in \_\_\_\_\_ and excreted.
6. A pure liquid can be obtained from its solution by \_\_\_\_\_.
7. Plants \_\_\_\_\_ nutrients from the soil only if they are \_\_\_\_\_ in water.
8. Solubility of solids in water \_\_\_\_\_ with \_\_\_\_\_ in temperature.
9. Most of the substances we see around are \_\_\_\_\_.
10. Condensation takes place when water vapor hits the \_\_\_\_\_ surface.
11. A \_\_\_\_\_ substance is one that has a constant composition and properties throughout.
12. A mixture where the components are evenly distributed and cannot be distinguished is called a \_\_\_\_\_ mixture.
13. The process of separating a solid from a liquid by allowing the solid to settle at the bottom is known as \_\_\_\_\_.
14. \_\_\_\_\_ is used to separate larger particles from smaller ones by passing a mixture through a mesh or sieve.
15. The method used to obtain pure water from a mixture of water and salt is called \_\_\_\_\_.
16. \_\_\_\_\_ is a universal solvent because it can dissolve many substances.
17. In fractional distillation, the substances are separated based on their different \_\_\_\_\_ points.
18. The process of separating immiscible liquids using a funnel is called \_\_\_\_\_.
19. \_\_\_\_\_ is the process of heating a solution until the liquid evaporates, leaving behind the dissolved solid.
20. The method of separating mixtures using a fan to blow away lighter materials is called \_\_\_\_\_.

**Define the following: -**

1. Compound
2. Pure Substances
3. Mixture
4. Components
5. Homogeneous mixture
6. Heterogeneous mixtures
7. Sedimentation
8. Decantation
9. Filtration
10. Loading
11. Solute
12. Solvent
13. Sediments
14. Saturated solution
15. Magnetic Separation

**Answer in one-word:-**

1. This is the temperature at which a liquid becomes a gas- \_\_\_\_\_
2. The process of removing grains from stalks. - \_\_\_\_\_
3. The process of separation of insoluble solids from liquid.- \_\_\_\_\_
4. The process of separating soluble solids from liquids- \_\_\_\_\_
5. The process of conversion of water vapor into liquid. - \_\_\_\_\_
6. Funnel with a stopper- \_\_\_\_\_
7. Universal solvent- \_\_\_\_\_
8. Gas mixed in aerated drinks- \_\_\_\_\_
9. Liquid above the sediments- \_\_\_\_\_
10. Filters used at the water treatment plant supplying water to houses- \_\_\_\_\_

**Tick the correct option**

1. Which of the following is NOT an example of filtration?

- |                               |                                   |
|-------------------------------|-----------------------------------|
| a) Using a tea strainer       | b) Draining pasta with a colander |
| c) separating salt from water | d) Using muslin cloth on tap      |

2. In a filtration process, what is the material that passes through the filter called?

- a) Residue      b) Filtrate      c) Solute      d) Precipitate

3. It is added in water to kill germs.

- a) Potassium      b) Chlorine      c) Alum      d) Sand

4. The key principle of this method is the difference in the boiling point of the substances being separated.

- a) Filtration      b) Evaporation      c) Distillation      d) Loading

5. Immiscible liquids are separated using this method-

- a) Evaporation      b) Distillation      c) Fractional Distillation      d) Separating funnel

6. Which of the following can dissolve in water

- a) Only solids      b) Only gases and liquids      c) Solids, liquids and gases      d) Only liquids

7. Which one of the following is not true for handpicking-

- a) the quantity of mixture is small      b) the wanted substance is present in small quantity  
c) the unwanted substance has different color and size      d) both b and a

8. It is a device with very fine pores in it.

- a) Sieve      b) Filter Paper      c) Winnowing basket      d) Strainer

9. Solute + Solvent =

- a) Compound      b) Sedimentation      c) Mixture      d) Saturated solvent

10. How can we dissolve sugar faster in water?

- a) By Stirring      b) By leaving it undisturbed      c) By boiling      d) both a and c

11. Which of the following is a pure substance?

- a) Mixture      b) Saltwater      c) Gold      d) Sand

12. Which type of mixture is described as having components that are not evenly distributed?

- a) Homogeneous      b) Heterogeneous      c) Solution      d) Alloy

13. What method is used to separate sand from water?  
a) Filtration      b) Evaporation      c) Distillation      d) Decantation
14. Which process involves separating components based on their boiling points?  
a) Sedimentation      b) Filtration      c) Fractional Distillation      d) Handpicking
15. What is the purpose of winnowing?  
a) To separate liquids      b) To separate grains from chaff  
c) To dissolve solids in liquids      d) To filter out impurities
16. Which device is used to separate immiscible liquids?  
a) Sieve      b) Separating Funnel      c) Condenser      d) Filter Paper
17. What method would you use to separate salt from saltwater?  
a) Sedimentation      b) Evaporation      c) Filtration      d) Handpicking
18. What is the term for the process of allowing particles to settle at the bottom of a liquid?  
a) Filtration      b) Decantation      c) Sedimentation      d) Distillation
19. Which substance is commonly used as a universal solvent?  
a) Alcohol      b) Oil      c) Water      d) Vinegar
20. Which separation method would be best for separating a mixture of sand and sugar?  
a) Filtration      b) Evaporation      c) Sieving      d) Handpicking
21. In a filtration process, what is the material that passes through the filter called?  
a) Residue      b) Filtrate      c) Solute      d) Precipitate
22. Why might sand NOT be a good choice for filtering muddy water?  
a) Sand particles are too large      b) Sand dissolves in water  
c) Sand is too heavy      d) Sand particles are too small
23. Which of these mixtures would be LEAST suitable for separation by filtration?  
a) Sand and water      b) Coffee grounds and water  
c) Salt dissolved in water      d) Pebbles in water

24. In which scenario is filtration NOT the primary separation method being used?

- a) Using a mosquito net
- b) Skimming cream off the top of milk
- c) Brewing coffee in a coffee maker
- d) Using an air purifier in a room

25. What property of a substance is MOST important for it to be an effective filter?

- a) It must be transparent
- b) It must be porous
- c) It must be soluble in water
- d) It must be magnetic

26. Which of the following is TRUE about the residue in a filtration process?

- a) It always dissolves in the filtrate
- b) It is always smaller than the pores of the filter
- c) It is always the desired product of filtration
- d) It is retained by the filter

27. If you filter a mixture of sand, salt, and water using a paper filter, what will be in the filtrate?

- a) Sand and salt
- b) Only salt
- c) Salt water
- d) Pure water

28. Which of these is NOT a common use of filtration?

- a) Purifying drinking water
- b) Separating cream from milk
- c) Removing dust from air
- d) Brewing tea

29. In a water treatment plant, which process typically comes AFTER filtration?

- a) Sedimentation
- b) Coagulation
- c) Disinfection
- d) Screening

**Fill the boxes: -**

1. Separate the mixtures from compounds.

Saltwater, Urea, Washing Powder, Air, Sand with Iron fillings, Glucose, Carbon Dioxide, Milk with cereals, Chalk, Salt

Mixture	
Compound	

2. Separate the elements from compounds.

Water, Calcium Carbonate, Oxygen, Hydrogen, Methane, Carbon Dioxide, Gold, Salt, Carbon	
Elements	
Compounds	

3. Separate homogeneous mixtures from heterogeneous mixtures.

Air, lemonade, crude oil, detergent in water, sand and iron, brass, honey and water, vinegar, chalk in water, orange juice and pulp, cereals in milk, blood, coffee.

Homogeneous Mixture	Heterogeneous Mixture

4. Below given are some mixtures. Group them on the basis of the method of separation.  
Corn and straws, water and oil, sand and stones, chalk and chalk dust, insects and stored grains, pasta and water, grains and stones, milk and cream, dirty water, dust particles in air, water and talcum powder, water and melted butter, pearls of different sizes.

Winnowing	
Decantation	
Sieving	
Hand-picking	
Loading	

**Write short answers: -**

1. What is the difference between a compound and a mixture?
2. Name two pure substances.
3. Explain solubility in water.
4. Why is water important for our body?
5. Is air a homogeneous or heterogeneous mixture? Why?
6. What are the properties of a pure substance?
7. What role does the direction of wind play in the process of winnowing? (hint: The person doing the winnowing should stand in a certain way depending on the direction of the wind for the winnowing) Explain.
8. Why are we able to dissolve sugar easily in warm water than in cold water?
9. Mention three ways in which threshing is done.
10. What is winnowing? Which property does this process use for separation.
11. Why is it important to know the properties of the constituents for the process of separation?
12. List properties of a mixture.
13. How can we increase the solubility of a solute?
14. Which separation method will we use for separating gases from liquid?
15. Explain why solubility of nutrients in water is important to plants?
16. Explain why separation of substances is necessary with appropriate examples.
17. If we have to separate two immiscible liquids, which process would we apply?
18. Why filtering tea leaves is filtration and not sieving?
19. Do you think winnowing can be done on a cloudy day when the wind is not blowing? Give reasons to support your answer.
20. How is water important to the marine life?
21. Explain the process of cleaning of the drinking water with a neat labelled diagram.
22. Name the method by which sedimentation can be made faster.
23. Why is water called a universal solvent?
24. Explain with a detailed diagram, the process of distillation.
25. Why the air is cleaner after the rain?
26. What is a separating funnel. What is it used to separate? Explain with a diagram.
27. Why filter paper is used for separating an insoluble solid from a liquid?
28. What is fractional distillation, and how does it differ from simple distillation?
29. Why sometimes it is necessary to use more than one method to separate substances in a mixture?

30. What is a saturated mixture? Is solubility of all substances measured in water? Give reasons to support your answer.

**Write true or false and correct the incorrect statement: -**

1. A pure compound has fixed melting and boiling point.
2. Solubility of gases in water decreases with the decrease in temperature.
3. All miscible liquids are homogeneous mixtures.
4. The solubility of a substance is measured in 100gm of water.
5. Alum is soluble in water.
6. During the formation of a mixture, the molecules of a solvent and solute remain the same.
7. The particles of the insoluble solid can be smaller than the holes of the filtering device.
8. The solubility of a substance refers to its saturated solution.
9. Rocks are mixtures.
10. Iron nails can be separated from iron fillings with the help of a magnet.

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