

Is Matter around us Pure Chemistry Questions with Solutions

Q1. Dissolving common salt in water is a

- (a) Physical change
- (b) Chemical change
- (c) Both a and b
- (d) None of these

Answer: Dissolving common salt in water is a physical change.

Q2. Name the technique to separate butter from curd.

- (a) Centrifugation
- (b) Evaporation
- (c) Fractional Distillation
- (d) None of these

Answer: (a), Centrifugation is used to separate butter from curd.

Q3. What are the constituents of brass?

- (a) Zinc and Carbon
- (b) Copper and Carbon
- (c) Iron and Copper
- (d) Zinc and Copper

Answer: (d), Zinc and Copper are the constituents of the brass.

Q4. State a difference between pure and impure substances.

Answer: The constituents that make a pure substance cannot be separated by physical means. In contrast, the components of an impure substance can be separated by physical means.

Q5. What is the tincture of iodine?

Answer: The tincture of iodine is a weak iodine solution. It is used as an antiseptic used to disinfect wounds.

Q6. How can you change a saturated solution to an unsaturated solution without adding more solvent?

Answer: By heating the saturated solution, we can change a saturated solution to an unsaturated solution without adding more solvent

Q7. Two liquids, 'A' and 'B', are miscible with each other at room temperature. Which separation method will you apply to separate the mixture of 'A' and 'B' if the difference in their boiling points is 27°C?

Answer: We can separate two miscible liquids by fractional distillation if they have a difference in boiling points.

Q8. What kind of mixtures can be separated by crystallisation?

Answer: Crystallization is used to separate solids from a liquid solution. It is related to precipitation, but the precipitate is formed in a crystal form that exhibits extremely high purity levels in this process. We can apply the principle of crystallisation to purify impure substances.

Q9. What is the Tyndall effect? Which types of solutions show it?

Answer: The scattering of light on colloidal particles is known as the Tyndall effect. Colloidal solutions and a few suspensions show this effect.

Suspension and colloidal solutions are heterogeneous solutions where the solute is partially dissolved in the solvent. The solute particles remain freely suspended in the solution, and the scatter light shows solute particles.

Q10. What is a suspension? Mention a few properties of suspension?

Answer: A suspension is a heterogeneous mixture of solids dispersed in liquids. The suspended solute particles do not dissolve but remain suspended throughout the medium—for example, Mud water.

Few properties of suspension are mentioned below.

- A suspension is a heterogeneous mixture.
- Suspension shows the Tyndall effect, i.e. if a light beam is scattered on colloidal particles, then the scatter light will show solute particles.
- The naked eye can see the suspension particles.

Q11. Differentiate between elements and compounds.

Answer:

S. No.	Elements	Compounds
1.	Elements are pure substances that are composed of only one type of atom.	Compounds are formed by the chemical combination of two or more elements.
2.	There are around 118 elements, of which 94 are naturally occurring.	There are endless compounds in the universe.
3.	Symbols and numbers represent elements. For example, Sodium is represented by Na.	A chemical formula represents compounds. For example, Sodium chloride is represented by NaCl.
4.	Elements cannot be broken down by chemical reactions.	We can easily separate compounds by chemical reactions.

Q12. Differentiate between compound and mixture.

Answer:

S. No.	Compound	Mixture
1.	Compounds are formed by the chemical combination of two or more elements.	Mixtures are created by the physical mixing of two or more substances.
2.	Compounds are pure substances.	Mixtures are impure substances.
3.	Chemical composition of compounds is always fixed.	A mixture can have a variable composition.
4.	Compounds are always homogeneous.	A mixture can either be homogenous or heterogeneous.
5.	Chemical or electrochemical methods separate compounds.	Physical separation methods such as filtration can separate mixtures.
6.	The compound has different properties from its constituents.	Mixture properties depend on its constituent.
7.	The melting and boiling points of a compound are always defined.	The melting and boiling points of a mixture are not defined.
8.	Example: Water, baking soda and salt.	Example: Mud water, smog (smoke + fog), sugar solution, milk, blood and dusty air.

Q13. Differentiate between sol, solution and suspension.

Answer:

S. No.	Sol	Solution	Suspension
1.	Sol is a colloidal suspension with particles with dimensions around 1 nanometer to 1 micrometre.	A solution is a mixture of two or more substances in a liquid state.	A suspension is a turbid dispersion with large particles greater than 1 micrometre.
2.	Sol is a heterogeneous mixture.	The solution is a homogenous mixture.	Suspension is a heterogeneous mixture.
3.	It exhibits the Tyndall effect.	It doesn't display the Tyndall effect.	It may or may not show the Tyndall effect.

4.	It is visible with an ultramicroscope.	It can't be visualised.	It is visible with the naked eye.
5.	It is relatively stable.	It is stable.	It is not stable.
6.	Example: Milk and blood.	Example: Sugar solution and Salt solution.	Example: Mud water and Dusty air.

Q14. Differentiate between homogeneous and heterogeneous mixture.

Answer:

S. No.	Homogenous Mixture	Heterogeneous Mixture
1.	Homo means the same.	Hetero means different.
2.	It has a uniform composition.	It has a non-uniform composition.
3.	It has only one phase.	It has more than one phase.
4.	It can't be separated physically.	It can be separated physically.
5.	Example: Sugar solution.	Example: Mud water.

Q15. What is chromatography? What are the applications of chromatography?

Answer: Chromatography is an analytical technique to separate components of a mixture. The mixture is dissolved in the movable phase, which carries it through a dual substance called the static phase.

The applications of chromatography are mentioned below.

- It is widely used in the pharmaceutical and food industries.
- It is used in detecting drugs in urine or other body fluid.
- It is used in forensics in witnessing and determining scrap amounts of substances in the contents of the bladder or stomach.
- It is used in monitoring air quality and testing drinking water.

Practise Questions on Is Matter around us Pure

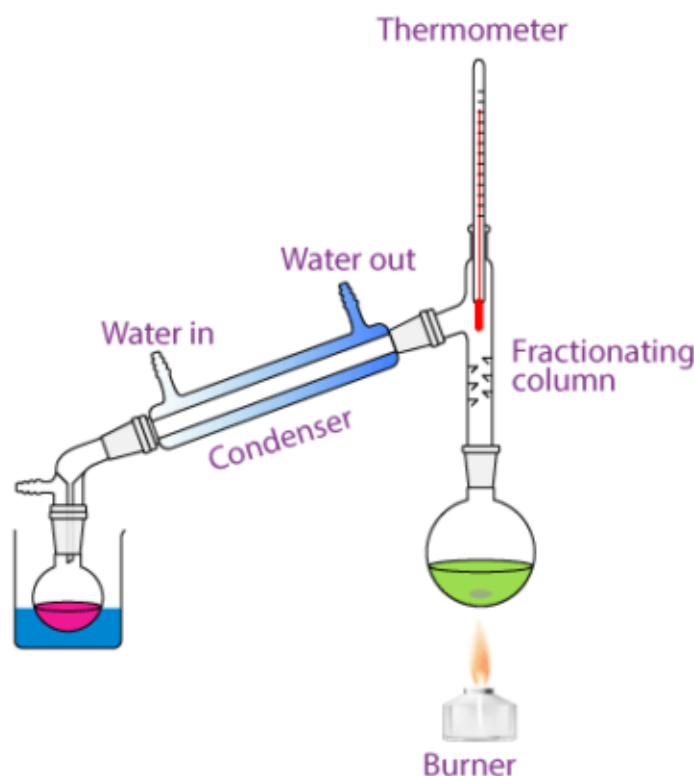
Q1. How will you separate a mixture containing kerosene and petrol, which are miscible with each other (the difference in their boiling points is more than 25°C)?

Answer: According to the question, kerosene and petrol are miscible, and their boiling points differ by more than 25 degrees Celsius, which is a significant difference. Therefore they can be separated using a simple distillation procedure.

Distillation can separate kerosene and petrol since their boiling points differ by 25 degrees Celsius. We will pour the kerosene and petrol combination into a hot distillation flask. Because petrol has a lower boiling point, it will evaporate and create vapours first as the mixture's temperature rises. A condenser condenses gasoline vapours and collects them through the condenser output. In the distillation flask, kerosene with a higher boiling point will be left behind.

Because their vapours will develop within the same temperature range if the difference in boiling points of two liquids is not significant, a simple distillation procedure cannot be utilised to separate them. Fractional distillation separates these liquids by passing the vapours through a fractionating column before condensation.

FRACTIONAL DISTILLATION



Q2. Name the methods used to separate the following:

- Butter from curd.
- Salt from seawater
- Camphor from salt

Answer: We can separate the following by

- Centrifugation is used to separate butter from curd. The process is ruled on the principle of density.

- We can use the simple evaporation technique to separate salt from seawater. Distillation causes water to evaporate, leaving solid salt behind, hence salt production.
- Sublimation can be used to separate camphor from salt, as during the phase change, camphor does not undergo a liquid phase.

Q3. Give an example of a solution in which solid is a solute and the solvent.

Answer: Alloys are solid in solid solutions. For example, brass contains about 30% zinc and 70% copper. Here, zinc is the solute, while copper is the solvent.

Q4. What is centrifugation? Where is it used?

Answer: Centrifugation is an analytical technique used to separate suspended particles of a substance from a liquid. It is based on the principle that denser particles stay at the bottom and lighter particles at the top when rotated at high speed in a centrifuge application. It separates butter from milk and squeezes water from clothes in a washing machine.

Q5. Can we separate a mixture of alcohol and water by a separating funnel?

Answer: No, we can not separate a mixture of alcohol and water by a separating funnel as they are miscible.