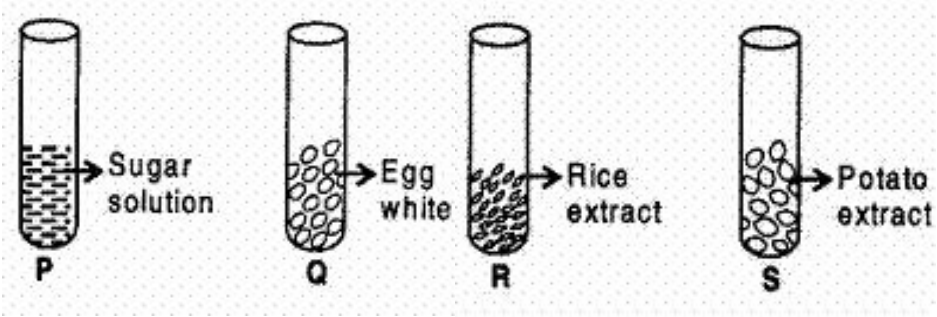
CBSE Test Paper 03

Chapter 02 Is Matter around Us Pure

1. Four test P, Q, R, S shown below contain the following:



On adding 2 drops of iodine to each tube, which will show blue-black solution **(1)**

   a. Q and R
   b. R and S
   c. P, Q, R and S
   d. P and Q

2. When you add carbon disulphide in a test tube containing a mixture of iron fillings and sulphur powder, then what would you observe after shaking the test tube well? **(1)**

   a. After sometimes, carbon disulphide, sulphur and iron filings form three separate layers in the test-tube
   b. Some brown gas is evolved
   c. Sulphur dissolves to from colourless solution and iron filings settles down
   d. Yellow solution is formed and iron filings settles down.

3. The process of evaporation is fast when the mixture is **(1)**

   a. heated but covered
   b. heated but not covered
   c. covered but not heated
   d. neither heated nor covered

4. Which of the following would show positive test for the presence of starch? **(1)**

a. Bread
b. Milk
c. Coriander
d. Cauliflower

5. Match the following with correct response. **(1)**

Column A	ColumnB
(1) Substance retain their property	(A) Element
(2) Elements are combined in fixed proportion by mass	(B) Mixture
(3) Simple substance that cannot be broken down	(C) Atom
(4) Smallest unit of compound	(D) Compound

a. 1-C, 2-B, 3-D, 4-A
b. 1-B, 2-D. 3-A, 4-C
c. 1-D, 2-A, 3-C, 4-B
d. 1-A, 2-C, 3-B, 4-D

6. An emulsion is a colloidal solution formed by mixing **(1)**
a. Two miscible liquids
b. Two immiscible liquids
c. Any two liquids
d. Any two gases

7. What is mass percentage of a solution? **(1)**

8. Name the technique to separate:-

a. butter from curd
b. salt from sea-water
c. camphor from salt

9. Is fresh air which we breathe in, a pure substance in terms of science? **(1)**

10. To the already prepared solution of a 'solute A' prepared in water, a small amount of 'A' is added. However, it does not dissolve. What does it indicate? **(1)**

11. What is a colloid? What are the various properties of colloids? **(3)**

12. What is a suspension? What are the properties of a suspension? **(3)**

13. A solution of H_2SO_4 acid is labeled as 95 percent. What mass of this solution should be diluted with water to get 5 L of solution containing 10 g of H_2SO_4 per litre? **(3)**

14. Sucrose (sugar) crystals obtained from sugarcane and beetroot are mixed together. Will it be a pure substance or a mixture? Give reasons for the same. **(3)**

15. Which separation techniques will you apply for the separation of the following? **(5)**

a. Sodium chloride from its solution in water.
b. Ammonium chloride from a mixture containing sodium chloride and ammonium chloride.
c. Small pieces of metal in the engine oil of a car.
d. Different pigments from an extract of flower petals.
e. Butter from curd.
f. Oil from water.
g. Tea leaves from tea.
h. Iron pins from sand.
i. Wheat grains from husk.
j. Fine mud particles suspended in water.

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Answers

1. b. R and S

   Explanation: Rice and potato contain starch. Starch is complex carbohydrate which consists of manly gloucose molecules. It gives blue-black colour with iodine solution.

2. c. Sulphur dissolves to from colourless solution and iron filings settles down

   Explanation: Sulphur dissolves to from colourless solution because carbon disulphide is a colourless volatile liquid and a non polar solvent. Being heavy iron filings settles down under the effect of gravity.

3. b. heated but not covered

   Explanation: Evaporation is a type of vaporization, that occurs on the surface of a liquid as it changes into the gaseous phase. When heating is done and the mixture is not covered at that time evaporation is fast.

4. a. Bread

   Explanation: When iodine solution added in bread its colour change black. So, bread contains starch. Foods made from starchy vegetables, grains or their flours, such as french fries, baked potatoes, breads, pasta, rice, cookies and cakes, are all high in starches.

5. b. 1-B, 2-D. 3-A, 4-C

   Explanation:

   i. B In mixtures the components do not lose their properties.
   ii. D In a compound the constituent elements combine in fixed proportion by mass.
   iii. A Elements are made up of same kind of atoms & elements can not be further broken down.
   iv. C An atom is the smallest unit of matter that has the properties of an element.

6. b. Two immiscible liquids

Explanation: Emulsions are an example of colloids composed of tiny particles suspended in another immiscible (unmixable) material. An emulsion is a suspension of two liquids that usually do not mix together. These liquids that do not mix are said to be immiscible.

7. **Mass percentage of a solution** is defined as the mass of a solute (in grams) present in one hundred gram of a solution.
   Mass percentage = (Mass of solute / Mass of solution) x 100

8. a. Technique to separate butter from curd: **Centrifugation**
   b. Technique to separate salt from sea-water: **Evaporation**
   c. Technique to separate camphor from salt: **Sublimation**

9. No, it is not a pure substance but it is a homogeneous mixture of several gases (e.g., nitrogen, oxygen, carbon dioxide, water vapours etc.).

10. This indicates that the solution of the substance 'A' in water is of saturated nature. The solution is known as saturated solution.

11. Colloids are heterogeneous mixtures in which the particle size is so small that the particles cannot be seen by naked eyes. The suspended particles form the dispersed phase of the colloid. The solvent in which the colloidal particles are suspended forms the continuous phase or the dispersing medium of the colloid. E.g. Milk.
    The properties of a colloid are as follows:-

    i. A colloid is heterogeneous in nature but appears homogeneous.
    ii. The size of colloidal particles is too small to be seen individually by naked eyes. The size of the particles is between 10^{-7} cm to 10^{-5} cm. They can easily pass through a filter paper.
    iii. The particles of a colloidal solution scatter a beam of light passing through it and make its path visible.
    iv. The particles of a colloidal solution do not settle down under the effect of gravity when the solution is left undisturbed for some time. They are quite stable.

12. A suspension is a heterogeneous mixture in which the solute particles do not dissolve but remain suspended throughout the bulk of the medium.

The properties of a suspension are as follows:-

a. The particle size (diameter) is more than 10^{-5} cm. Hence, the particles can be seen through naked eyes.
b. The particles of a suspension scatter a beam of light passing through it.
c. The particles have a tendency to settle down at the bottom of the vessel under the action of gravity when left undisturbed.
d. The particles of a suspension can be separated by through the process of filtration.

13. The concentration of the acid is given as 95 percent.
This means that 95 g of H_2SO_4 is present in 100 g of the acid solution.
1 L of the diluted H_2SO_4 solution should contain 10 g of H_2SO_4.
Therefore, 5 L of the diluted solution should contain 50 g of H_2SO_4.
50 g of H_2SO_4 will be present in $\frac{50\times100}{95}$ g of the solution
or 50 g of H_2SO_4 will be present in 52.63 g of the solution.
Therefore, 52.63 g of the given solution should be diluted with water to get 5 L of solution containing 10 g of H_2SO_4 per litre.

14. When sucrose (sugar) crystals obtained from sugarcane and beetroot are mixed together, it will not lead to a mixture. It will be a pure substance because the chemical composition of sucrose crystals will be the same whether the sucrose crystals are obtained from sugarcane or from beetroot. The combined substance will have sucrose crystals of only one kind and will have a definite set of properties - that of sucrose.

15.

	Mixture	**Separation technique**
(a)	Sodium chloride from its solution in water	Evaporation of water
(b)	Ammonium chloride from a mixture containing sodium chloride and ammonium chloride	Sublimation of ammonium chloride
(c)	Small pieces of metal in the engine oil of a car	Filtration

(d)	Different pigments from an extract of flower petals	Chromatography
(e)	Butter from curd	Centrifugation of curd
(f)	Oil from water	Separating funnel
(g)	Tea leaves from tea	Filtration by using a strainer
(h)	Iron pins from sand	With the help of a magnet
(i)	Wheat grains from husk	Winnowing
(j)	Fine mud particles suspended in water	Centrifugation