

CBSE Test Paper 04
Chapter 02 Is Matter around Us Pure

1. A science teacher soaked arhar dal in water for few hours and put 2 ml of solution each into 4 test tubes and asked 4 students to test it for the presence of adulterant metanil yellow. Student A put water into it, student B put HCl into it, student C put NaOH into it and student D put alcohol into it. The student who get the correct result is: **(1)**
 - a. Student D
 - b. Student A
 - c. Student B
 - d. Student C

2. What happens on adding dilute HCl to a mixture of iron filling and sulphur powder? **(1)**
 - A. H₂S is formed
 - B. A colour less and odourless gas is formed
 - C. A greenish solution appears
 - D. FeS is formed
 - a. B and C
 - b. A, B and C
 - c. A, B, C and D
 - d. A and B

3. Which of the following chemicals are used to observe the presence of starch in the food extract? **(1)**
 - a. Conc. HCl
 - b. Conc. H₂SO₄
 - c. I₂ solution (Iodine)
 - d. Benedict's reagent

4. The steam of the funnel must to be kept, white during filtration **(1)**
 - a. touching the inner wall of the beaker
 - b. out of beaker
 - c. no touching the inner wall of the beaker
 - d. at the centre of the beaker

5. A hard substance when bent produces a tinkling sound. Predict its nature. **(1)**

- a. Metal
 - b. Compound
 - c. Non-metal
 - d. Mixture
6. Tyndall effect is observed in which one of the following? **(1)**
- a. True solution
 - b. Starch + Water
 - c. Alum + Water
 - d. NaCl + Water
7. What is meant by a substance? **(1)**
8. What types of mixtures are represented by the Air containing suspended particles. **(1)**
9. Which separation techniques will you apply for the separation of the fine mud particles suspended in water. **(1)**
10. Which separation techniques will you apply for the separation of the iron pins from sand. **(1)**
11. A solution of urea in water contains 16 grams of it in 120 grams of solution. Find out the mass percentage of urea in solution. **(3)**
12. Which type of mixture is separated by the technique of crystallisation? **(3)**
13. A candle seems to lose its weight on burning. Explain this fact. **(3)**
14. A solution contains 30 g of glucose, 20 g of sugar in 500 mL of water. Calculate the mass percent of glucose and sugar (density of water = 1 g /mL). **(3)**
15. Distinguish between compounds and mixtures. **(5)**

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Answers

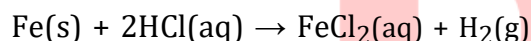
1. c. Student B

Explanation: Student B put HCl into it get correct result because presence of metanil yellow can be tested in dal by adding few drops of hydrochloric acid to test sample. If the test solution turns pink in colour, it indicates of presence of mentanil yellow.

Metanil yellow + HCl → Pink colour

2. 1. B and C

Explanation: When dil HCl is added to a mixture of iron filings and sulphur powder, then iron being more reactive than hydrogen will displace hydrogen from the acid, forming its salt instead. Sulphur powder will not react with HCl. Following is the reaction between Fe and HCl.



Sulfur will not react with HCl and it will not conduct electricity.

FeCl₂ is Pale blue-green. And H₂ is a a colour less and odourless gas.

So, Statement B and C are correct statement

3. c. I₂ solution (Iodine)

Explanation: Many different food groups contain a carbohydrate known as starch. Using an iodine solution, you can test for the presence of starch. When starch is present, the iodine changes from brown to blue-black or purple.

4. 1. touching the inner wall of the beaker

Explanation: If solid is to be separated from liquid using a filtering process, then the filter paper has to be properly prepared. fold the filter paper in half, then fold again to 10 degrees of a 90 degree fold. tear off the corner of the outer fold. Place snugly into funnel and moisten the filter paper with solvent of the mixture being filtered, then press the paper against the top wall of the funnel to form a seal. It saves time because otherwise droplets will be formed which time to fall down.

5. 1. Metal

Explanation: Metals are sonorous i.e. metals produce sound when hit with an object. So, A hard substance when bent produces a tinkling sound is metal. Non-metals are

non-sonorous

6. b. Starch + Water

Explanation: Starch forms a colloid in water (hot water).

7. A substance can be defined as a kind of matter whose constituent particles cannot be separated from each other by any physical process since they are all similar in chemical properties.
8. Air containing suspended particles is an heterogeneous mixture.
9. Sedimentation : As a result of sedimentation, mud particles will settle as precipitate. It can be separated later on by filtration or decantation
10. Magnetic separation : A magnet will attract iron pins and not sand particles
11. Given, Mass of urea present in solution = 16 g

Mass of solution = 120 g

$$\text{Mass percentage of urea} = \frac{\text{Mass of urea}}{\text{Mass of solution}} \times 100 = \frac{16\text{g}}{120\text{g}} \times 100 = 13.33 \%$$

Therefore, Mass percentage of urea in solution = 13.33%.

12. Crystallization is a solid-liquid separation technique which is used to obtain pure solid crystals from impure sample of the respective solid. The principle of crystallization is based on the limited solubility of a compound.
E.g. Crystallization is used to obtain pure sugar from impure sugar.
13. Since burning is a chemical change and candle wax (paraffin wax) is a hydrocarbon. It has a long chain of carbon surrounded by hydrogen. Therefore, while burning, carbon and hydrogen present in the candle gets converted to carbon dioxide and water vapour, which escape to the atmosphere. That is why candle seems to lose its weight.
14. Given, Mass of glucose present in the solution = 30 g

Mass of sugar present in the solution = 20 g

Volume of water = 500mL.

Density of water = 1 g/mL

Therefore, Mass of water = Density \times volume = 1 g/mL \times 500 mL = 500 g

Total mass of the solution = (30 + 20 + 500)g = 550 g

$$\text{Mass \% of the glucose} = \frac{\text{Mass of glucose}}{\text{Total mass of solution}} \times 100 = \frac{30}{550} \times 100 = 5.45 \%$$

$$\text{Now, Mass \% of the sugar} = \frac{\text{Mass of sugar}}{\text{Total mass of solution}} \times 100 = \frac{20}{550} \times 100 = 3.63 \%$$

Therefore, Mass % of glucose = 5.45 % and Mass % of sucrose = 3.63 %.

15.

S.No.	Compounds	Mixtures
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1.	Compounds are formed as a result of chemical reactions between two or more elements or compounds.	Mixture are formed by simply mixing two or more constituents. There are no chemical reactions between the constituents.
2.	The components of a compound are always present in a definite ratio by mass.	The components of a mixture may be present in any ratio.
3.	The properties of a compound are entirely different from its constituents.	The properties of a mixture are same as those of its constituents.
4.	Compounds are always homogeneous in nature.	Mixtures are usually heterogeneous (except in solutions).
5.	Compound formation is accompanied by absorption or evolution of light, heat or electrical energy.	Heat, light or electrical energy may not be evolved or absorbed during the formation of a mixture.
6.	Melting and boiling points of a compound are usually sharp and fixed.	Melting and boiling points of a mixture are usually not sharp and fixed.
7.	The constituent elements of a compound can not be separated by any physical method. Special chemical methods or electrochemical methods are employed to separate them.	The constituent elements of mixture can be easily separated by physical means.
8.	For example: Water, Carbon dioxide.	For example: Mixture of iron filings and sulphur.