PRACTICE PAPER 04 (2024-25)
CHAPTER 02 IS MATTER AROUND US PURE?

SUBJECT: SCIENCE **MAX. MARKS : 40**

CLASS : IX **DURATION : 1½ hrs**

General Instructions:

(i). **All** questions are compulsory.
(ii). This question paper contains 2**0** questions divided into five Sections A, B, C, D and E.
(iii). **Section A** comprises of **10 MCQs** of **1 mark** each. **Section B** comprises of 4 questions of **2 marks** each. **Section C** comprises of 3 questions of **3 marks** each. **Section D** comprises of 1 question of **5 marks** each and **Section E** comprises of 2 Case Study Based Questions of **4 marks** each.
(iv). There is no overall choice.
(v). Use of Calculators is not permitted

SECTION – A

Questions 1 to 10 carry 1 mark each.

1. Which of the following are physical changes?
(i) Melting of iron metal
(ii) Rusting of iron
(iii) Bending of an iron rod
(iv) Drawing a wire of iron metal
(a) (i), (ii) and (iii) (b) (i), (ii) and (iv)
(c) (i), (iii) and (iv) (d) (ii), (iii) and (iv)

2. Two substances, A and B, were made to react to form a third substance, A_2B, according to the following reaction

$$2A + B \rightarrow A_2B.$$

Which of the following statements concerning this reaction are incorrect?
(i) The product A_2B shows the properties of substances A and B
(ii) The product will always have a fixed composition
(iii) The product so formed cannot be classified as a compound
(iv) The product so formed is an element
(a) (i), (ii) and (iii) (b) (ii), (iii) and (iv)
(c) (i), (iii) and (iv) (d) (ii), (iii) and (iv)

3. Identify any two statements that are true for pure substances among the following:
(I) Pure substances contain only one kind of particles.
(II) Pure substances may be compounds or mixtures.
(III) Pure substances have the same composition throughout.
(IV) Pure substances can be exemplified by all elements other than nickel.
Options:
(a) (I) and (II) (b) (III) and (IV)
(c) (II) and (III) (d) (I) and (III)

4. Two chemical species, X and Y, combine together to form a product P which contains both X and Y

$$X + Y \rightarrow P.$$

X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following concerning the species X, Y and P are correct?
(i) P is a compound
(ii) X and Y are compounds
(iii) X and Y are elements

(iv) P has a fixed composition

(a) (i), (ii) and (iii) (b) (i), (ii) and (iv)
(c) (ii), (iii) and (iv) (d) (i), (iii) and (iv)

5. In sugar solution:
(a) Sugar is solute, water is solvent
(b) Sugar is solvent, water is solute
(c) Both are solutes
(d) Both are solvents

6. Tincture of iodine has antiseptic properties. This solution is made by dissolving:
(a) iodine in potassium iodide (b) iodine in vaseline
(c) iodine in water (d) iodine in alcohol

7. A small amount of mud was mixed with water in a beaker and left undisturbed for some time. The mixture was filtered after some time, the filtrate will be:
(a) a true solution
(b) a colloidal solution
(c) can be a true solution or a colloidal solution
(d) a suspension

8. Select the best option about gel and sols.
(a) Gel and sols are colloids that are solid-solid.
(b) Gel is a liquid-solid colloid while sol is a solid-liquid colloid.
(c) Gel is a solid-liquid colloid, while sol is a solid-solid colloid.
(d) Gel is a solid-liquid colloid while sol is a liquid-solid colloid.

In the following questions 9 and 10, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.
(a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
(b) Both the Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
(c) Assertion is true but the Reason is false.
(d) Assertion is false but the Reason is true.

9. **Assertion (A):** Alloys are a heterogeneous mixture of metal.
Reason (R): Alloys can be separated into their components using chemical methods.

10. **Assertion (A):** Elements and compounds are pure substances.
Reason (R): Properties of compounds are different from those of its constituent elements.

SECTION – B

Questions 11 to 14 carry 2 marks each.

11. Ramya was making tea. Her brother asked her to make a list of the steps that she had taken to make tea by using the terms solution, solvent, solute, dissolve, soluble, insoluble, filtration and residue to describe her solution.

12. Define a solute and solvent.

13. You are provided with a solution of substances 'X'. How will you test whether it is saturated or unsaturated with respect to 'X' at a given temperature? What happens when a hot saturated solution is allowed to cool?

14. Explain what is observed when a strong beam of light is focused on a colloidal solution of starch in water. Name the phenomenon.

OR

A solution contains 40 g of common salt in 320 g of water. Calculate the concentration in terms of mass by mass percentage of the solution.

SECTION – C

Questions 15 to 17 carry 3 marks each.

15. What would you observe when

(i) a saturated solution of potassium chloride prepared at 60°C is allowed to cool at room temperature?

(ii) an aqueous sugar solution is heated to dryness?

(iii) a mixture of iron filings and sulphur powder is heated strongly?

16. (a) Why path of light is not visible in a solution when a beam of light is passed through it ?

(b) Classify each of following as solution, colloid or suspension:

(i) A mixture whose particles are big enough to scatter a beam of light passing through it.

(ii) A mixture whose particles settle down when it is left undisturbed.

OR

Calculate the mass of sodium sulphate required to prepare its 20% (mass per cent) solution in 100 g of water.

17. (i) Define solubility. How does the solubility of a solute in solvent change with an increase in temperature?

(ii) Is the amount of salt and sugar or barium chloride, that can be dissolved in water at a given temperature, the same?

18. On heating, calcium carbonate breaks down into calcium oxide and carbon dioxide.

(a) Is this a physical or a chemical change?

(b) Can you prepare one acidic and one basic solution by using the products formed in the above process? If so, write the chemical equation involved.

SECTION – D

Questions 18 carry 5 marks each.

19. Based on the following characteristics distinguish in tabular form the behaviour of true solution, suspension and colloidal solution.

OR

A group of students took an old shoe box and covered it with a black paper from all sides. They fixed a source of light (a torch) at one end of the box by making a hole in it and made another hole on the other side to view the light. They placed a milk sample contained in a beaker/tumbler in the box as shown in the figure. They were amazed to see that milk taken in the tumbler was illuminated. They tried the same activity by taking a salt solution but found that light simply passed through it.

(i) Explain why the milk sample was illuminated. Name the phenomenon involved.

(ii) Same results were not observed with a salt solution. Explain.

(iii) Can you suggest two more solutions which would show the same effect as shown by the milk solution?

SECTION – E (Case Study Based Questions)

Questions 19 to 20 carry 4 marks each.

20. Read the following information and answer the questions based on information and related studied concepts.

According to Ayushi, when solid X is put into water, it dissolves with evolution of heat and causes a small explosion to produce the two products Y and Z. The characteristics of Y and Z

products differ significantly from those of solid X and water. Furthermore, solid X and water cannot be transformed back into products Y and Z.

When another solid P is dissolved in water, it absorbs a small amount of heat and forms the product Q, which cools down. The qualities of both solid P and water are represented by the product Q. Product Q can also be turned into solid P and water.

(a) What type of change is found in solid X when dissolved in water? (1)

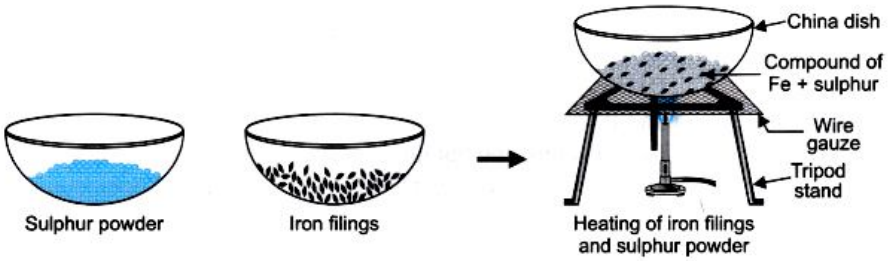
(b) What type of change is found in solid P when dissolved in water? (1)

(c) Name the solid P. (1)

(d) Identify the process through which solid P can be recovered from Q. (1)

21. Read the given passage and answer the questions that follow based on the passage and related studied concepts.

Rishika and Aditi were exploring different processes for separating different components from a mixture. They were given the mixture of iron filings and sulphur powder. Rishika heated the mixture strongly and she observed that a new substance was formed. Aditi did not do anything with the Iron filings and the sulphur powder that was given to her.



(a) Name a technique to separate iron filling and sulphur powder.

(b) What will be the colour of the compound formed when Rishika heated the mixture?

(c) Tine added dilute hydrochloric acid to a mixture of iron fillings and sulphur. Rishika added the same acid to the compound formed after heating the mixture. What will they observe?