

**CHAPTER-2****IS MATTER AROUND US PURE****SUB TOPIC-Types of Mixture, Separation of Mixtures****Level-1 (1 Mark)**

1. Which of the following is a mixture?

Salt, Air, Water, Alum, Sugar

2. Name one metal and one non-metal which exist as liquids at room temperature.

3. Name a metal which is soft and a non-metal which is hard.

4. Name a non-metal which is a good conductor of electricity.

5. Name one solid, one liquid and one gaseous non-metal.

6. What is meant by saying that metals are malleable and ductile?

7. What is meant by saying that metals are sonorous?

8. What is the general name of the materials which contain at least two pure substances and show the properties of their constituents?

9. What is the major difference between a solution and an ordinary mixture?

10. What name is given to those elements which are neither good conductors of electricity like copper nor insulators like sulphur?

11. What is the name of the clear liquid formed when a solid dissolves in a liquid?

12. Which of the two will scatter light: soap solution or sugar solution? Why?

13. State whether colloidal solutions are homogenous or heterogeneous.

14. How much water should be added to 15 grams of salt to obtain 15 per cent salt solution?

15. A 5 per cent sugar solution means that:

(a) 5g of sugar is dissolved in 95g of water.

(b) 5g of sugar is dissolved in 100g of water.

16. Calculate the concentration of a solution which contains 2.5 g of salt dissolved in 50 g of water.

17. What is the concentration of a solution which contains 16 g of urea in 120 g of solution?

18. If 25 mL of acetone is present in 150 mL of its aqueous solution, calculate the concentration of solution.

19. What happens when the temperature of a saturated sugar solution is increased?

20. Choose one term from the following which includes the other three:

aerosol, emulsion, colloid, sol

21. Name the solvent you would use to separate a mixture of sulphur and carbon.
22. Name the process you would use to separate a mixture of anthracene and copper sulphate?
23. What type of magnet is fitted on a crane to separate scrap iron objects from a heap of waste materials in factories?
24. Name the process you would use to separate a mixture of two miscible liquids (like acetone and water).
25. Name one pair of substances whose mixture can be separated by fractional distillation.
26. State whether the following statements are true or false :
  - (a) Alcohol can be separated from a mixture of alcohol and water by a separating funnel.
  - (b) Salt and water can be recovered from an aqueous salt solution by the process of evaporation.
27. A carpenter wants to separate iron nails from saw-dust. Which method of separation should he choose?
28. Name one pair of substances whose mixture can be separated completely by distillation.
29. How will you separate a mixture of chalk powder and water?
30. State one application of centrifugation.
31. Name the apparatus you would use to separate oil from water.
32. (a) Name the process by which common salt is obtained from sea-water.  
(b) Name the process by which common salt is purified.

Fill in the following blanks:

33. Milk is a ..... solution but vinegar is a ..... solution.
34. A colloid is a ..... mixture and its components can be separated by the technique known as.....
35. An element is made up of only one kind of.....
36. The three important metalloids are....., ..... and.....
37. The elements which are sonorous are called.....
38. Miscible liquids are separated by .....
39. Immiscible liquids are separated by using a .....
40. The separation of liquids by fractional distillation is based on the difference in their.....
41. If a mixture contains iron filings as one of the constituents, it can be separated by using a.....

**Multiple Choice Questions (MCQs)**

42. Which of the following is not an element?

(a) Graphite (b) germanium (c) silica (d) silicon

43. Which of the following are compounds?

(i) CO (ii) No (iii) NO (iv) Co

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

44. One of the following substances is neither a good conductor of electricity nor an insulator. This substance is

(a) Chromium (b) germanium (c) gallium (d) potassium

45. The element which is not common between the compounds called baking soda and soda ash is

(a) sodium (b) hydrogen (c) oxygen (d) carbon

46. "Is malleable and ductile" best describes:

(a) a solution (b) a metal (c) a compound (d) a non-metal

47. The property / properties which enable copper metal to be used for making electric wires is/are:

(a) copper metal is malleable and ductile  
(b) copper metal is a good conductor of electricity  
(c) copper metal is ductile and has low electrical resistance  
(d) copper metal is sonorous and an excellent conductor of electricity

48. On the basis of composition of matter, milk is considered to be:

(a) a pure substance (b) an impure substance (c) an element (d) a compound

49. Which of the following are homogeneous in nature?

(i) Ice (ii) wood (iii) soil (iv) air  
(a) (i) and (iii) (b) (ii) and (iv) (c) (i) and (iv) (d) (iii) and (iv)

50. Which of the following mixture cannot be separated by using water as the solvent?

(a) copper sulphate and sand (b) sand and potash alum  
(c) sand and sulphur (d) sugar and sand

51. The chemical which can be used to separate a mixture of carbon powder and sulphur powder successfully is:

(a) Carbon dioxide (b) hydrochloric acid  
(c) Hydrogen sulphide (d) carbon disulphide

52. Pure copper sulphate can be obtained from an impure sample by the process of :

(a) Evaporation (b) fractional distillation (c) centrifugation (d) crystallization

53. The material which is added to water during purification process at the water works so as to disinfect it is:

(a) Potassium permanganate (b) betadine (c) chlorine (d) potash alum

54. Naphthalene can be separated from sand:

(a) by sublimation (b) by distillation  
(c) by crystallization (d) by using water as solvent

55. The correct increasing order of the boiling points of liquid oxygen, liquid argon and liquid nitrogen present in liquid air is :

(a) nitrogen, oxygen, argon (b) nitrogen, argon, oxygen  
(c) argon, oxygen, nitrogen (d) oxygen, argon, nitrogen

56. The boiling point of liquid argon is:

(a)  $-196^{\circ}\text{C}$  (b)  $-183^{\circ}\text{C}$  (c)  $-186^{\circ}\text{C}$  (d)  $-193^{\circ}\text{C}$

57. One of the following does not undergo sublimation. This one is :

(a) camphor (b) cobalt (c) chromium (d) steel

58. One of the following is solid foam. This one is:

(a) butter (b) bread (c) shaving cream (d) ruby

59. One of the following does not show Tyndal effect. This one is:

(a) soap solution (b) ink (c) sugar solution (d) starch solution

60. Milk of Magnesia is:

(a) a colloid (b) a true solution  
(c) a homogeneous mixture (d) a suspension

61. One of the following liquids will leave behind a residue on heating. This one is:

(a) Brine (b) bromine (c) mercury (d) alcohol

62. Which of the following can be called a suspension?

(a) Milk (b) milk of magnesia (c) salt solution (d) vinegar

63. One of the following represents the solution of solid in a solid. This one is :

(a) Boron (b) brass (c) beryllium (d) bread

64. The rusting of an iron object is called :

(a) corrosion and it is a physical as well as a chemical change  
(b) dissolution and it is a physical change  
(c) corrosion and it is a chemical change  
(d) dissolution and it is a chemical change

65. Which of the following are physical changes?

(i) Melting of iron metal (ii) Rusting of iron metal  
(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)

66. Which of the following are chemical changes?

(i) Decaying of wood (ii) Burning of wood  
(iii) Sawing of wood (iv) Hammering of nail into wood.  
(a) (i) and (ii) (b) (ii) and (iii) (c) (iii) and (iv) (d) (i) and (iv)



heterogeneous mixture? Comment.

85. What difference in the properties of common salt and sand would enable you to separate a mixture of these two substances?

86. How will you separate a mixture of iron filings and powdered carbon?

87. How is the impurity of iron present in several substances removed in industries?

88. How will you separate a mixture of common salt, sulphur powder and sand?

89. Discuss the method of separating a mixture containing chalk powder, iron filings and naphthalene.

90. How will you separate a mixture of mercury, oil and water?

91. What is chromatography? State its two applications.

92. Which of the following can be separated by using a separating funnel and which cannot be separated by using a separating funnel?

(a) water and kerosene mixture  
(b) water and acetone mixture

Give reasons for your answer.

#### LEVEL-3

#### Long Questions (5 Marks)

93. (a) What is meant by (i) elements (ii) compounds, and (iii) mixtures? Write down the names of two elements, two compounds and two mixtures.

(b) Classify the following into elements, compounds and mixtures:

Marble, Air, Gold, Brass, Sand, Diamond, Graphite, Petroleum, Common salt, Sea-water, Chalk.

94. (a) What is a mixture? Give two examples of mixtures.  
(b) What is meant by (i) homogeneous mixtures, and (ii) heterogeneous mixtures? Give two examples of homogeneous mixtures and two of heterogeneous mixtures.

(c) What is the other name of homogeneous mixtures?

95. (a) What are the three general classes of matter? Give one examples of each type.  
(b) Draw a flow-chart for the schematic representation of different types of matter.

96. A, B and C are all liquids. Liquid A has a comparatively low boiling point. On heating, liquid A vaporizes completely without leaving behind any residue. Liquid A is being used increasingly as a fuel in motor vehicles either alone or by mixing with petrol. Liquid B has a very high boiling point. It also vaporizes completely on heating, without leaving any residue. Liquid B is a conductor of electricity and used in making thermometers. Liquid C has a moderate boiling point. On heating, liquid C vaporizes leaving behind a white solid D which is used in cooking vegetables. The condensation of vapours from C gives a liquid E which turns anhydrous  $\text{CuSO}_4$  to blue.

(a) Which liquid could be an element? Name this element.

(b) Which liquid could be a mixture? Name this mixture.  
(c) Which liquid could be a compound? Name this compound.  
(d) What could the solid D be?  
(e) What do you think is liquid E?

97. (a) What is a physical change? Give two examples of physical changes.  
(b) What is a chemical change? Give two examples of chemical changes.

98. (a) Define solubility of a substance. How does it vary with temperature?  
(b) What do you understand by the statement "the solubility of copper sulphate in water at  $20^{\circ}\text{C}$  is 20.7 g" ?  
(c) What is the effect of temperature on the solubility of solids in liquids?

99. (a) What is meant by a solution? Give two examples of solutions.  
(b) What is a suspension? Give two examples of suspensions.  
(c) What is a colloid? Give two examples of colloids (or colloidal solutions).

100. (a) Differentiate between a saturated and an unsaturated solution. How will you test whether a given solution is saturated or not?  
(b) How would you prepare a saturated solution of sodium chloride in water at  $25^{\circ}\text{C}$ ? What will happen if this solution is cooled to  $10^{\circ}\text{C}$ ?

101. When the solid A is added to water, it dissolves with the evolution of a lot of heat and making little explosions to form two products B and C. The properties of products B and C are entirely different from those of solid A as well as water. Moreover, products B and C cannot be reconverted into solid A and water. When another solid D is added to water, it dissolves with the absorption of a little heat to form a product E which cools down. The product E shows the properties of both, solid D as well as water. Moreover, product E can be converted into solid D and water.

(a) What type of change occurs when solid A is dissolved in water? Why?  
(b) What type of change occurs when solid D is dissolved in water? Why?  
(c) Name a metal which you think could behave like solid A. Also name the products B and C.  
(d) Name the solid D if it is the one which is used in making ordinary dry cells.  
(e) Name the process by which D can be recovered from E.

102. With the help of a labeled diagram, describe the method of separating ammonium chloride from a mixture of ammonium chloride and common salt. Mention the difference in the properties of ammonium chloride and sodium chloride which has made this separation possible.

103. (a) What is fractional distillation? What is the use of fractionating column in fractional distillation?  
(b) Draw a labeled diagram of the fractional distillation apparatus used for separating a

mixture of alcohol and water.

104. (a) Explain how, nitrogen, oxygen and argon gases are separated from air.  
(b) Draw a flow diagram of the processes involved in obtaining gases like nitrogen, oxygen and argon from air.

105. Tincture of iodine is a mixture of two materials X and Y. The material Y has a property that its solid form can be converted directly into vapours on heating by a process called Z.  
(a) What could X be?  
(b) What could Y be?  
(c) Name the process Z.  
(d) Which process would you use to recover both the components X and Y from tincture of iodine?  
(e) Which process can be used to recover only component Y from tincture of iodine?

106. Write the steps you would use for making tea. Use the words solution, solvent, solute, dissolve, soluble, insoluble, filtrate and residue.

