Chapter 2

ANSWERS

Multiple Choice Questions

1. (b)	**2.** (c)	**3.** (d)	**4.** (d)	**5.** (c)
6. (c)	**7.** (a)	**8.** (c)	**9.** (d)	

Short Answer Questions

10. (a) Separation by using separating funnel

(b) Sublimation

(c) Filtration followed by evaporation

or

Centrifugation followed by evaporation/distillation

(d) Separation by using separating funnel to separate kerosene oil followed by evaporation or distillation.

11. Hint— Look for the larger surface area. The presence of beads in tube (a) would provide a larger surface area for cooling.

12. Crystallization

13. Homogeneous— mixture of salts and water only

Heterogeneous— contains salts, water, mud, decayed plant etc.

14. Hint— Distillation, since acetone is more volatile it will separate out first.

15. (a) Solid potassium chloride will separate out.

(b) Initially the water will evaporate and then sugar will get charred.

(c) Iron sulphide will be formed.

16. Particle size in a suspension is larger than those in a colloidal solution. Also molecular interaction in a suspension is not strong enough to keep the particles suspended and hence they settle down.

17. Both fog and smoke have gas as the dispersion medium. The only difference is that the dispersed phase in fog is liquid and in smoke it is a solid

18. Physical properties – (a) and (c)

Chemical properties – (b) and (d)

19. 'C' has made the desired solution

$$\text{Mass by volume \%} = \frac{\text{Mass of solute}}{\text{Volume of solution}} \times 100$$

$$= \frac{50}{100} \times 100$$

$$= 50 \text{ \% mass by volume}$$

20. (a) Sublimation   (f) Sedimentation
    (b) Diffusion   (g) Scattering of light (Tyndall effect)
    (c) Dissolution/diffusion
    (d) Evaporation, diffusion
    (e) Centrifugation

21. Sample 'B' will not freeze at 0°C because it is not pure water. At 1 atm, the boiling point of pure water is 100°C and the freezing point of pure water is 0°C.

22. Pure gold is very soft as compared to gold alloyed with silver or copper. Thus for providing strength to gold, it is alloyed.

23. This element is a metal. Other characteristics expected to be possessed by the element are–lustre, malleability, heat and electrical conductivity.

24. (a) Evaporation or distillation
    (b) Distillation
    (c) Separation by using separating funnel
    (d) Sublimation
    (e) Chromatography

25. (a) heterogenous, centrifugation
    (b) physical, chemically
    (c) water, chloroform (hint– density of water is less than that of chloroform)
    (d) fractional distillation
    (e) scattering, Tyndall effect, colloidal

26. It is a pure substance because chemical composition of sugar crystals is same irrespective of its source.

27. **Hint**—Tyndall effect can be seen when light passes through a heterogeneous mixture. Example, when sunlight passes through the canopy of a dense forest.

28. **Hint**— Water and alcohol are miscible.

29. (a) Chemical change

(b) Acidic and basic solutions can be prepared by dissolving the products of the above process in water

$CaO + H_2O \rightarrow Ca(OH)_2$ (basic solution)

$CO_2 + H_2O \rightarrow H_2CO_3$ (acidic solution)

30. (a) Iodine

(b) Bromine

(c) Graphite

(d) Carbon

(e) Sulphur, phosphorus

(f) Oxygen

31.

Elements	*Compounds*
Cu	$CaCO_3$
Zn	H_2O
F_2	
O_2	
Diamond (carbon)	
Hg	

32. Chlorine gas, Iron, Aluminium, Iodine, Carbon, Sulphur powder.

Long Answer Questions

33. The fractionating column packed with glass beads provides a surface for the vapours to collide and lose energy so that they can be quickly condensed and distilled. Also length of the column would increase the efficiency.
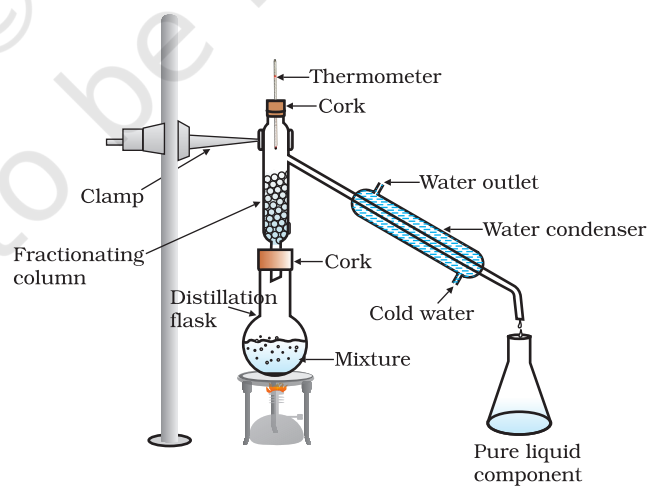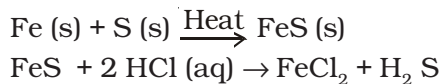

Figure: *Fractional distillation*

34. **Hint–**(a) Homogenous mixture, because they have a uniform composition throughout

   (b) No, solid solutions and gaseous solutions are also possible. Examples brass and air

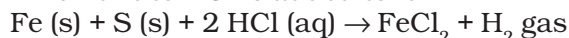   (c) No, solution is a homogenous mixture of two or more substances

35. **Part A**

   $Fe\ (s) + S\ (s) \xrightarrow{\text{Heat}} FeS\ (s)$

   $FeS + 2\ HCl\ (aq) \rightarrow FeCl_2 + H_2S$

   Part B

   $Fe\ (s) + S\ (s) \rightarrow$ Mixture of iron filings and sulphur

   When dilute HCl is added to it

   $Fe\ (s) + S\ (s) + 2\ HCl\ (aq) \rightarrow FeCl_2 + H_2$ gas
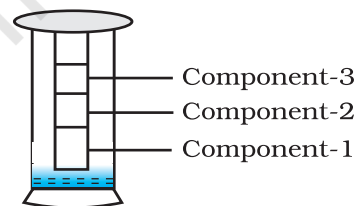
   Sulphur remains unreacted

   H_2S gas formed has a foul smell and on passing through lead acetate solution, it turns the solution black. Hydrogen gas burns with a pop sound.

36. **Hint–**   (i)   Three different bands will be observed.

   (ii)   Chromatography

   (iii)   To separate the pigments present in Chlorophyll.

Component-3
Component-2
Component-1

37. (a) Milk is a colloid and would show Tyndall effect.

   (b) Salt solution is a true solution and would not scatter light.

   (c) Detergent solution, sulphur solution.

38. **Hint—**Physical changes —(a), (b), (e)

   Chemical changes— (c), (d)

39. (a)   No.

   $$\text{Mass \%} = \frac{\text{Mass of solute}}{\text{Mass of solute + Mass of solvent}} \times 100$$

   (b)   Solution made by Ramesh

   $$\text{Mass \%} = \frac{10}{10 + 100}\ 100 = \frac{10}{110} \times 100 = 9.09\%$$

   Solution made by Sarika

   $$\text{Mass \%} = \frac{10}{100} \times 100 = 10\%$$

   The solution prepared by Sarika has a higher mass % than that prepared by Ramesh.

40. **Hint–**
    Step-1 Separate iron filings with the help of a magnet
    Step-2 Sublimation of the remaining mixture separates ammonium chloride
    Step-3 Add water to the remaining mixture, stir and filter
    Step-4 The filtrate can be evaporated to get back sodium chloride.

41. (c)

    $$\text{Mass \%} = \frac{\text{Mass of solute}}{\text{Mass of solute} + \text{Mass of solvent}} \times 100$$

    $$= \frac{0.01}{0.01 + 99.99} \times 100$$

    $$= \frac{0.01}{100} \times 100$$

    $$= 0.01 \text{ g}$$

42. Let the mass of sodium sulphate required be $= x$ g

    The mass of solution would be $= (x + 100)$ g
    x g of solute in $(x + 100)$ g of solution

    $$20\% = \frac{x}{x + 100} \times 100$$

    $$20x + 2000 = 100x$$

    $$80x = 2000$$

    $$x = \frac{2000}{80}$$

    $$= 25 \text{ g}$$