

**Kerala State Board
Class IX Chemistry
Sample Paper – 1 Solution**

1.

- (a) **Lewis theory:** Substances which can accept a lone pair of electrons during chemical reactions are Lewis acids and substances which donate a lone pair of electrons are Lewis bases. Examples: Boron trifluoride (BF_3) is a Lewis acid and ammonia (NH_3) is a Lewis base.
- (b) **Arrhenius theory:** Acids are substances which produce hydrogen ions (H^+) when dissolved in water and bases are substances which produce hydroxide ions (OH^-) when dissolved in water. Examples: HCl is an acid and NaOH is a base.

2. The separation techniques used are

- (a) Butter from curd: Centrifugation
- (b) Iron and sand: Magnetic separation using a magnet
- (c) Tea leaves from tea: Filtration
- (d) Grain from husk: Sieving
- (e) Ammonium chloride and sodium chloride: Sublimation
- (f) Mud particles suspended in water: Sedimentation followed by decantation

3. The situation which shows greater cohesive forces: Water is poured in a taro leaf

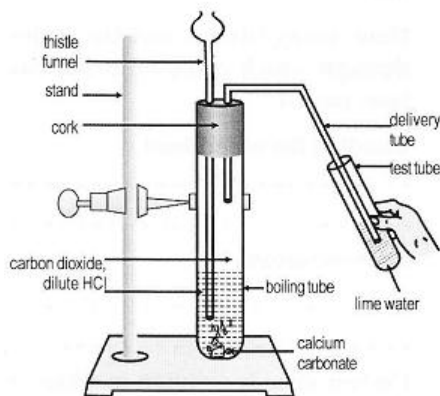
The situations which show greater adhesive forces:

- i. Wet clothes stick to the body
- ii. Small insects stick to oily paper
- iii. Pressing wet glass plates together and then attempting to separate them

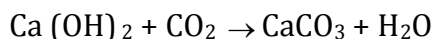
4.

(a) CO₂ is prepared by the following method:

Put marble chips (CaCO₃) in a test tube and then add dil. HCl. Carbon dioxide gas is produced quietly and steadily.



(b) CO₂ gas is detected by passing it through lime water. Lime water turns milky because CaCO₃ which is insoluble in water is formed and gives a milky appearance to the solution.



5.

(a) This separation technique is called chromatography.

(b) Chromatography is the process used for separation of solutes soluble in the same solvent. During adsorption of mixture, the weakly adsorbed component rises faster through the paper. Those which are strongly adsorbed rise slowly and get separated.

(c) Yes. This technique can be used to separate chlorophyll components.

6.

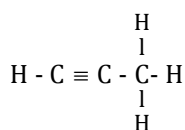
(a)

i. Single covalent bond, C-C

ii. Alkanes

General formula = C_nH_{2n+2}

(b)



Propyne

Common name: Alkynes

General formula: C_nH_{2n-2}

7.

- (a) A and C belong to the 2nd period, B and D belong to the 3rd period.
- (b) B and C belong to the same group 13.
- (c) A – Neon
- (d) D has minimum valency and B and C have maximum valency.

8. Points in support of the statement:

- 1. Chlorofluorocarbons cause depletion of the ozone layer.
- 2. Causes respiratory problems.

Points against the statement:

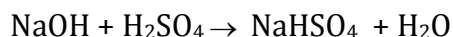
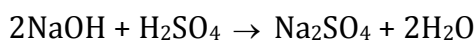
- 1. Chlorine is useful in the process of water treatment.
- 2. It is essential in the preparations of many medicines.

9. Chlorine gas is produced in the reaction.



It is a colourless gas. Conc. sulphuric acid acts as a drying agent in this reaction and removes the water produced because chlorine dissolves in water. Chlorine is used for bleaching in various fields.

10. Two salts will be formed if sulphuric acid is used instead of HCl. If alkali is taken in excess, Na_2SO_4 will be formed. If the acid is taken in excess, NaHSO_4 will be formed.



11. Transition elements lie between electropositive s-block elements and electronegative p-block elements in the periodic table. In the representative elements (s- and p-block elements), the valence electrons are present only in the outermost shell, while in the transition elements, the valence electrons are present in the outermost shell as well as in the d-orbitals of the penultimate shell.

Scandium-21 is the first element and Zinc-30 is the last element of the first transition series.

12. The possible reasons to justify this statement are

- 1. The forces of attraction between the particles are maximum in solids and minimum in gases.
- 2. The spaces between the constituent particles and the kinetic energy of the particles are minimum in solids and maximum in gases.
- 3. The solids have fixed shape and are not compressible. The arrangement of particles is most ordered in solids.

13.

- (a) B
- (b) C, D
- (c) I, J
- (d) G