

SECTION – A

Question 1

Choose the correct answer from the multiple choice (A), (B), (C) and (D). [15]

- (i) Ammonium chloride, when heated, turns into its vapour without reaching its liquid state.

Which statement is true for this change?

P. The intermolecular force of attraction between the molecules is weak.

Q. The intermolecular space is more than that of other solids.

- (A) P (B) Q (C) Either P or Q (D) Neither P nor Q

- (ii) Evaporation, Vaporisation, Boiling, Liquefaction

The correct odd one with reason is/are:

P. Liquefaction is odd because it is a cooling process; the rest are heating processes.

Q. Evaporation is odd because it takes place below the boiling point; the rest takes place at their respectively fixed temperature.

- (A) P (B) Q (C) Both P & Q (D) Neither P nor Q

- (iii) 1. $\text{Mg} + \text{O}_2 \xrightarrow{\text{Heated}} \text{MgO}$

2. $2\text{Mg} + \text{O}_2 \xrightarrow{\text{Heated}} 2\text{MgO}$

Which equation out of 1 or 2 is helpful to prove the law of conservation of mass?

- (A) Equ – 1 (B) Equ – 2 (C) Both Equ -1 & 2 (D) None of these.

- (iv) Assertion: In a sugar water solution, the volume of water before and after the solution remains the same.

Reason: Sugar splits into molecules and gets adjusted in the intermolecular gaps of water.

So volume does not increase.

(A) If both assertion and reason are true, and reason is the correct explanation of the assertion.

(B) If both assertion and reason are true, and reason is not the correct explanation of the assertion.

(C) If the assertion is true but the reason is false.

(D) If the assertion is false but the reason is true.

- (v) Some characteristics of chemical changes are listed below.

P. There is an exchange of energy.

Q. The change is permanent and reversible.

R. One or more new substances are formed.

Which one is the incorrect character?

- (A) P (B) Q (C) R (D) None of these.

- (vi) A natural, periodic, reversible physical change is:

P. Change of day and night

Q. Change of the seasons.

- (A) P (B) Q (C) Neither P nor Q (D) Both P & Q.

(vii) Water evaporates to water vapour.

Find out the correct statement/s related to the evaporation.

P. It absorbs the heat from the liquid during the process, hence causing cooling.

Q. It takes place on the upper surface only.

(A) P (B) Q (C) Neither P nor Q (D) Both P & Q.

(viii) It is all about a solid (A) + solid (B) mixture:

P. Both A and B are insoluble in water or a common solvent.

Q. A is heavier than water, and B is lighter than water.

The correct method to separate A and B is:

(A) Filtration (B) Solvent extraction

(C) Sedimentation and decantation (D) None of these.

(ix) The weight of the liquid A > the weight of the liquid B.

Liquid A is added to liquid B in a container, shaken well and allowed to stand for some time.

Which statement is correctly related to the mixture?

P. Liquid A sediments.

Q. Liquid B sediments.

(A) P (B) Q (C) Either P or R (D) Neither P nor R

(x) Some features of a liquid (A) + liquid (B) mixture are given below.

P. A can mix with B in any proportion

Q. Boiling point difference between (A – B) is more than 25°C.)

Which method is applicable for separation

(A) Distillation (B) Fractional distillation (C) Data is insufficient (D) None of these.

(xi) 1. EC: 2, 8, 7 2. EC: 2, 7 3. EC: 2, 4 4. EC: 2, 8, 6

P. The above EC indicates that all 4 atoms are non-metal.

Q. The above EC indicates that all 4 atoms are metals.

(A) P (B) Q (C) Both P & Q (D) None of these.

(xii) ${}^B_A X$ and ${}^C_A X$ are two different atoms that exhibit the following properties.

P. Both atoms belong to the same element.

Q. Both atoms have the same atomic number.

R. Both atoms have different mass numbers.

Which statement is incorrect about the properties mentioned above?

(A) P (B) Q (C) R (D) P, Q and R are correct.

(xiii) The two salts of the metal X are $X_3(PO_4)_x$, XCO_3 .

The value of x is:

(A) 2 (B) 3 (C) 4 (D) None of these.

(xiv) X is a metal and has valency 3. Its correct formula with carbonate, nitride and bisulfate is:

P. X_2CO_3 , X_3N_3 and X_3HSO_4

Q. X_2CO_3 , X_3N_3 and X_3HSO_4

R. $X_2(CO_3)_3$, XN and $X(HSO_3)_3$

S. $X_2(CO_3)_3$, XN and $X(HSO_4)_3$

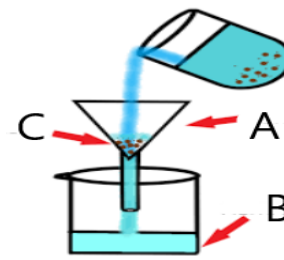
(A) P (B) Q (C) R (D) S

(xv) The metal carbonate of a metal X is $X_2(CO_3)_3$. Its nitride and nitrate would be:

- (A) XN , $X(NO_3)_3$ (B) X_3N_3 , $X_3(NO_3)_3$ (C) $X(NO_3)_3$, XN (D) $X_3(NO_3)_3$, X_3N_3

Question 2:

(i) Study the diagram and answer the following.



(a) Name the process of separation.

(b) Identify B and C.

(c) Write the name of the glass apparatus A.

(d) Give a physical property difference between B and C.

(ii) Write the molecular formula for the following:

[5]

(a) Aluminium sulphate (b) Copper(II) hydroxide (c) Lead(IV) oxide

(d) Potassium carbonate (e) Iron(III) Chloride

(iii) Write a balanced equation for the following: [5]

(a) $N_2 + H_2 \rightarrow NH_3$ (b) $SO_2 + O_2 \rightarrow SO_3$ (c) $P + O_2 \rightarrow P_2O_5$

(c) $Al + O_2 \rightarrow Al_2O_3$ (d) $CO + O_2 \rightarrow CO_2$

(iv) Complete the table:

[5]

Characteristics	Solids	liquids	Gases
Volume	Have a definite volume	Have a definite volume	(i) _____
Shape	(ii) _____	Has no definite shape	(iii) _____
Diffusion	Cannot diffuse	(iv) _____	(v) _____

(v) Match the following:

[5]

List-A

- (i) Sediment
- (ii) Distillate
- (iii) Filtrate
- (iv) Residue
- (v) Adsorption

List - B

- A. Absorption on the surface only.
- B. Settled solids
- C. The liquid that passes through the filter
- D. The condensed vapour
- E. The insoluble solid left on the filter

SECTION B

(Attempt any four questions)

Question 3:

(i) State kinetic theory of matter in terms of: [4]

- (a) Composition of matter (b) Inter-particle space
- (c) Inter-particle force (d) Energy possessed by the particles

(ii) Identify the following changes.

[3]

- (a) The changes are temporary and easily reversible.
- (b) The changes produce useful results brought about by man or nature.
- (c) The changes that take a longer time to complete.

(iii) Classify the process into physical or chemical change: [3]

Fermentation, Sublimation, Dehydration, Respiration, Boiling, Condensation,

Question 4:

- (i) (a) State two characteristics of a chemical change. [4]
 (b) State two characteristics of a physical change.
- (ii) The handpicking method of separation is used only when the (i) _____ (unwanted/wanted) material is present in (ii) _____ (larger/smaller) quantity and shape, size or colour of the (iii) _____ (wanted/unwanted) material. [3]
- (iii) Name a technique used to separate: [3]
 (a) Iron and sulphur
 (b) Salt from seawater
 (c) Sodium chloride + ammonium chloride

Question 5:

- (i) Complete the table: [4]
- | Element | Symbol | Variable valences | IUPAC Name |
|------------|--------|-------------------|-----------------------|
| Copper | Cu | (i), _____ | Copper(I), Copper(II) |
| (ii) _____ | Hg | (iii) +1, +2 | (iv), _____ |
- (ii) Name the term: [3]
 (a) The number of protons present in the nucleus of an atom.
 (b) The sum of protons and neutrons present in the nucleus.
 (c) The negatively charged particles of an atom.
- (iii) Give one example of a homogeneous mixture in each case: [3]
 (a) Two solids
 (b) Two liquids
 (c) A solid with a liquid

Question 6:

- (i) An atomic structure of an atom is given aside. Answer the following questions related to the atomic structure. [4]

- (a) What is the atomic number of the atom?

(b) Write the electronic configuration of the atom.

(c) Is it a metal or a non-metal?

(d) Write the formula of its bicarbonate.

- (ii) Classify into homogeneous and heterogeneous mixture: [3]

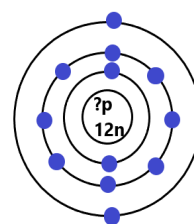
Sugar + water, sodium chloride + water, oil and water, wax + kerosene, air, iron dust + sulphur powder

- (iii) What do you call? [3]

(a) The fixed temperature at which a solid turns into its liquid.

(b) The fixed temperature at which a liquid turns into its vapour.

(c) The fixed temperature at which a vapour turns into its liquid.



Question 7:

- (i) Draw the atomic structure of $^{35}_{17}\text{Cl}$ and $^{23}_{11}\text{Na}$. [4]
- (ii) (a) What are isotopes? [3]
(b) Why do they show similar chemical properties?
(c) Why do they show different physical properties?
- (iii) Identify the method of separation to separate the components. [3]
(a) Iodine + ethyl alcohol (b) Ethyl alcohol + water (c) Chalk + water

Question 8:

- (i) Write the molecular formula for the following: [4]
(a) Ammonia (b) Sand (c) Glucose (d) Baking soda
- (ii) (a) X is a metal and its Electronic configuration is 2, 8, 2. Write the ionic equation when it turns into its ion.
(b) Y is a non-metal and its Electronic configuration is 2, 8, 7. Write the ionic equation when it turns into its ion.
(c) What is common in the electronic configuration of ions of X and Y [3]
- (iii) Write a metal/non-metal which is the exception to its normal property. [3]
(a) Metals are solids.
(b) Non-metals are non-lustrous.
(c) Metals are good conductors of electricity.

*****ALL THE BEST*****