



# ÉCOLE GLOBALE

INTERNATIONAL GIRLS' SCHOOL  
Dehradun

## HOLIDAY HOMEWORK - CLASS X B Chemistry

### Short Answer Questions (II) type (3 Marks)

1.

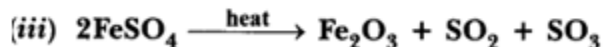
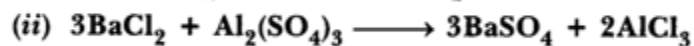
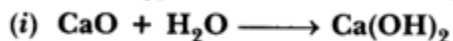
Name the reducing agent in the following reaction:



State which is more reactive, Mn or Al and why?

2.

Name the type of chemical reaction represented by the following equation:



3.

Write the chemical equation of the reaction in which the following changes have taken place with an example of each:

(i) Change in colour

(ii) Change in temperature

(iii) Formation of precipitate

4.

State the type of chemical reactions and chemical equations that take place in the following:

(i) Magnesium wire is burnt in air.

(ii) Electric current is passed through water.

(iii) Ammonia and hydrogen chloride gases are mixed.

5.

2g of ferrous sulphate crystals are heated in a dry boiling tube.

- (i) List any two observations.
- (ii) Name the type of chemical reaction taking place.
- (iii) Write the chemical equation for the reaction.

6.

What is observed when a solution of potassium iodide solution is added to a solution of lead nitrate? Name the type of reaction. Write a balanced chemical equation to represent the above chemical reaction. Write chemical equation reactions taking place when carried out with the help of

- (a) Iron reacts with steam
- (b) Magnesium reacts with dil HCl
- (c) Copper is heated in air.

7.

Explain the action of dilute hydrochloric acid on the following with chemical equation:

- (i) Magnesium ribbon (ii) Sodium hydroxide (iii) Crushed egg shells

8.

A white coloured powder is used by doctors for supporting fractured bones.

- (a) Write chemical name and formula of the powder.
- (b) When this white powder is mixed with water a hard solid mass is obtained. Write balanced chemical equation for the change.

9.

State the chemical properties on which the following uses of baking soda are based:

- (i) as an antacid
- (ii) as a soda acid fire extinguisher
- (iii) to make bread and cake soft and spongy.

### Long Answer Questions (5 Marks)

1.

State reason for the following statements:

- (i) Tap water conducts electricity whereas distilled water does not.
- (ii) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does.
- (iii) During summer season, a milk man usually adds a very small amount of baking soda to fresh milk.
- (iv) For a dilution of acid, acid is added into water and not water into acid.
- (v) Ammonia is a base but does not contain hydroxyl group.

2.

- (a) An ore on treatment with dilute hydrochloric acid produces brisk effervescence. What type of ore is this? What steps will be required to obtain metal from the enriched ore. ,
- (b) Copper coin is kept immersed in silver nitrate solution for some time. What change will take place in coin and colour of the solution ? Write balanced chemical equation of the reaction involved.

3.

Give reason for the following:

School bells are made up of metals.

Electric wires are made up of copper.

Aluminium oxide is considered as an amphoteric oxide.

Ionic compounds conduct electricity in molten state.

4.

What is ethanol? State its two properties. What happens when it is heated with excess of conc.  $\text{H}_2\text{SO}_4$  at 443 K? What role does conc.  $\text{H}_2\text{SO}_4$  play in this reaction? Write chemical equation of the reaction involved and the structural formula of the main product formed.

5.

Distinguish between esterification and saponification reactions of organic compounds with the help of the chemical equation for each. What is the use of (i) esters and (ii) saponification process?

## HOTS

1.

- (a) A metal compound 'X' reacts with dil.  $\text{H}_2\text{SO}_4$  to produce effervescence, The gas evolved extinguishes a burning candle. If one of the compound formed is calcium sulphate, then what is 'X' and the gas evolved? Also, write a balanced chemical equation for the reaction which occurred.
- (b) (i) Name one antacid. How does it help to relieve indigestion in stomach?  
(ii) A farmer treats the soil with quicklime or calcium carbonate. What is the nature of soil? Why does the farmer treat the soil with quicklime?

2.

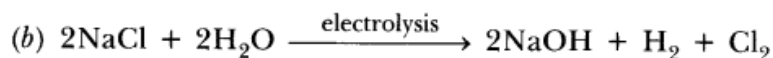
- (a) Identify the compound of calcium which is yellowish white powder and is used for disinfecting drinking water. Write its chemical name and formula. How is it manufactured? Write the chemical equation for the reaction involved. Also list two other uses of the compound.
- (b) Write the balanced chemical equation of chlor-alkali process.

3.

- (i) Dry pellets of a base 'X' when kept in open absorb moisture and turn sticky. The compound is also formed by chlor-alkali process. Write chemical name and formula of X. Describe chlor-alkali process with balanced chemical equation. Name the type of reaction that occurs when X is treated with dilute hydrochloric acid. Write the chemical equation. (ii) While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?

4.

- (a) Mention the pH range within which our body works. Explain how antacids give relief from acidity. Write the name of one such antacid.
- (b) Fresh milk has a pH of 6. How will the pH change as it turns to curd? Explain your answer.
- (c) A milkman adds a very small amount of baking soda to fresh milk. Why does this milk take a longer time to set as curd?
- (d) Mention the nature of toothpastes. How do they prevent tooth decay?



5.

- (i) Explain why is hydrochloric acid a strong acid and acetic acid, a weak acid. How can it be verified?
- (ii) Explain why aqueous solution of an acid conducts electricity.
- (iii) You have four solutions A, B, C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7,
  - (a) Identify the most acidic and most basic solutions.
  - (b) Arrange the above four solutions in the increasing order of  $H^+$  ion concentration.
  - (c) State the change in colour of pH paper on dipping in solution C and D.

6.

A metal 'M' which is one of the best conductor of heat and electricity used in making electric wires is found in nature as sulphide ore  $M_2S$ ?

- (i) Name the metal 'M'
- (ii) Which process will be suitable for extraction of this metal M from its ore  $M_2S$ ? Write the balanced chemical reactions involved in the process of ' extraction.
- (iii) With the help of a labelled diagram, explain the process of electrolytic refining of the metal.

7.

A metal (E) is stored under kerosene. When a small piece of it is left open in the air, it catches fire. When the product formed is dissolved in water, it turns red litmus to blue.

- (i) Name the metal (E).
- (ii) Write the chemical equation for the reaction when it is exposed to air and when the product is dissolved in water.
- (iii) Explain the process by which the metal is obtained from its molten chloride.

8.

An organic compound 'A' is an essential constituent of wine and beer. Oxidation of 'A' yields an organic acid 'B' which is present in vinegar. Name the compounds 'A' and 'B' and write their structural formula. What happens when 'A' and 'B' react in the presence of an acid catalyst? Write the chemical equation for the reaction.

9.

No reaction takes place when granules of a solid 'A' are mixed with a powder of solid 'B'. However when the mixture is heated, a reaction starts with evolution of much heat. Product 'C' of the reaction settles down as a liquid metal and solid product 'D' keeps floating over the liquid 'C'. This reaction is sometimes used for making metals for ready use in odd places.

(i) Based on this information, make assumptions about 'A' and 'B' and corresponding deductions about 'C' and 'D' and write a balanced chemical equation for the reaction. Include in the chemical equation about physical states of the reactants and products, need of heating for starting the reaction and the reaction being exothermic.

(ii) Name two types of chemical reactions to which this reaction can belong.

10.

Atoms of seven elements A, B, C, D, E, F and G have a different number of electronic shells but have the same number of electrons in their outermost shells. The elements A and C combine with chlorine to form an acid and common salt respectively. The oxide of element A is liquid at room temperature and is a neutral substance, while the oxides of the remaining six elements are basic in nature. Based on the above information, answer the following questions: What could the element A be?

(i) Will elements A to G belong to the same period or same group of the periodic table?

(ii) Write the formula of the compound formed by the reaction of the element A with oxygen,

(iii) Show the formation of the compound by a combination of element C with chlorine with the help of electronic structure.

(iv) What would be the ratio of number of combining atoms in a compound formed by the combination of element A with carbon?

(v) Which one of the given elements is likely to have the smallest atomic radius?

11.

Atoms of eight elements A, B, C, D, E, F, G and H have the same number of electronic shells but a different number of electrons in their outermost shells. It was found that elements A and G combine to form an ionic compound which can also be extracted from sea water. Oxides of the elements A and B are basic in nature while those of E and F are acidic. The oxide of element D is almost neutral. Answer the following questions based on the information given herein:

1. To which group or period of the periodic table do the listed elements belong?
2. Which one of the eight elements is likely to be a noble gas?
3. Which one of the eight elements would have the largest atomic radius?
4. Which two elements amongst these are likely to be non-metals?
5. Which one of these eight elements is likely to be a semi-metal or metalloid?

12.

In the following table, six elements A, B, C, D, E and F (here letters are not the usual symbols of the elements) of the Modern Periodic Table with atomic numbers 3 to 18 are given:

|           |           |           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>3</b>  | <b>4</b>  | <b>5</b>  | <b>6</b>  | <b>7</b>  | <b>8</b>  | <b>9</b>  | <b>10</b> |
| <b>A</b>  |           |           |           |           | <b>E</b>  |           | <b>G</b>  |
| <b>11</b> | <b>12</b> | <b>13</b> | <b>14</b> | <b>15</b> | <b>16</b> | <b>17</b> | <b>18</b> |
| <b>B</b>  | <b>C</b>  |           | <b>D</b>  |           |           | <b>F</b>  |           |

- (a) Which of these halogen ?is (i) a noble gas, (ii) a halogen  
(b) If B combines with F, what would be the formula of the compound formed?  
(c) Write the electronic configurations of C and E.