**Chemistry Question Paper**

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**SECTION A — Multiple Choice Questions (1 mark each)**

1. Electrolysis of water is a decomposition reaction. The mass ratio (MH : MO) of hydrogen and oxygen gases liberated at the electrodes during electrolysis of water is :
   (A) 8 : 1  (B) 2 : 1  (C) 1 : 2  (D) 1 : 8

2. The products formed when Aluminium and Magnesium are burnt in the presence of air respectively are :
   (A) $Al_3O_4$ and $MgO_2$  (B) $Al_2O_3$ and MgO  (C) $Al_3O_4$ and MgO  (D) $Al_2O_3$ and $MgO_2$

3. Consider the following reactions :
   (i) Dilute hydrochloric acid reacts with sodium hydroxide.
   (ii) Magnesium oxide reacts with dilute hydrochloric acid.
   (iii) Carbon dioxide reacts with sodium hydroxide.
   It is found that in each case :
   (A) Salt and water is formed.
   (B) Neutral salts are formed.
   (C) Hydrogen gas is formed.
   (D) Acidic salts are formed.

4. Reaction between two elements A and B forms a compound C. A loses electrons and B gains electrons. Which one of the following properties will not be shown by compound C ?
   (A) It has high melting point.
   (B) It is highly soluble in water.
   (C) It has weak electrostatic forces of attraction between its oppositely charged ions.
   (D) It conducts electricity in its molten state or aqueous solution.

5. Define a displacement reaction. Name a displacement reaction which is highly exothermic and has its use in joining railway tracks. Explain the process with a balanced chemical equation of the reaction that occurs.

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**SECTION B — Very Short Answer Questions (2 marks each)**

6. Write two observations to justify that in this experiment a chemical change has taken place.

7. “Excessive use of chemicals and pesticides in agriculture adversely affect the environment.” Justify this statement.
8. Write the name and chemical formula of a sodium compound which is sometimes added for faster cooking. How is it produced from sodium chloride as one of the raw materials? Give chemical equation for the reaction involved.
9. The compound mentioned in (a) above is also an ingredient of antacids. Why?
10. Name the end products formed when ferrous sulphate crystals are heated in a dry boiling tube. Write the balanced chemical equation for this reaction.

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**SECTION C — Short Answer Questions (3 marks each)**

11. “Displacement reactions also play a key role in extracting metals in the middle of the reactivity series.’’ Justify this statement with two examples.
12. With the help of an activity, explain the conditions under which iron articles get rusted.
    OR
    (i) Name two metals which react violently with cold water. List any three observations a student notes when these metals are dropped in a beaker containing water.
    (ii) Write a test to identify the gas evolved during this reaction.
13. Write the chemical equation for the complete oxidation of ethanol. State the essential condition for this reaction.
14. Write the balanced chemical equation for the reaction involved when :
    (I) Ethanol burns in oxygen.
    (II) Propene undergoes hydrogenation.
    (III) Ethanoic acid reacts with ethanol.

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**SECTION D — Long Answer Questions (5 marks each)**

16. Draw two isomeric structures of Butene ($C_4H_8$).

(ii) Name the following compounds (I) and (II).

(iii) Write the chemical equations for the following reactions with essential conditions :
(I) Ethanol undergoes complete oxidation
(II) Propene undergoes hydrogenation
(III) Ethanoic acid reacts with ethanol

17. When dry crystals of ferrous sulphate were heated in a dry boiling tube :
    (i) State the source of water droplets.
    (ii) Write colour change observed.
    (iii) Write balanced chemical equation.
    (iv) How many water molecules are attached per formula unit?
    (v) Write formula of crystalline copper sulphate and sodium carbonate.

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**SECTION E — Case-Based Questions (4 marks each)**

18. Seawater contains many salts dissolved in it.
    (a) Write balanced chemical equations to show the products formed during electrolysis of brine.
    (b) List two uses of any one product obtained.
    (c) (i) A mild non-corrosive basic salt ‘A’, used for faster cooking, produces compound ‘B’ on heating, used for removing permanent hardness of water. Identify A and B and write the heating equation.
    OR
    (ii) Define water of crystallisation. Give two examples of salts containing it.

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