CHEMISTRY

BOOKS - X BOARDS

X Boards

Section A

1. Write the balanced chemical equation for the following reaction and identify the type of reaction and define it.

'Iron III oxide reacts with Aluminium and gives molten iron and aluminium oxide'.

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2. A reddish brown coloured metal is used in electrical wires. When powdered and heated strongly in an open china dish, its colour turns black. When hydrogen gas is passed over this black substance, it regains its original colour. Based on the above information, answer the following question.

(i) Name the metal and the black coloured substance formed.

(ii) Write balanced chemical equations for both the reactions.

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3. (a) Give an example for a combination reaction which is exothermic.

(b) Identify the oxidising agent and reducing agent in the following reaction.

$H_2S + Cl_2 \rightarrow 2HCl + S$

(c) Name the phenomenon due to which the taste and smell of oily food changes when kept for a long time in open. Suggest one method to prevent it.

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4. (a) Write the name given to bases that are highly soluble in water. Give an example.

(b) Why does bee sting cause pain and irritation ? Rubbing of baking soda on the sting area gives relief. How ?

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5. (a) Why does calcium start floating when added to water?

(b) Most of the metals do not give hydrogen while reacting with nitric acid. Why?

(c) Write equation for the reaction of iron with steam. Name the compound of iron obtained.

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6. Why are homologous series of carbon compounds so called? Write chemical formula of two consecutive members of a homologous series and state the part of these compounds that determines their (i) physical properties, and (ii) chemical properties.

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7. (a) In the formation of compound between two atoms A and B, A loses two electrons and B gains one electron.

(i) What is the nature of bond between A and B ?

(ii) Suggest the formula of the compound formed between A and B.

(b) On similar lines explain the formation of $MgCl_2$ molecule.

(c) Common salt conducts electricity only in the molten state. Why ?

(d) Why is melting point of $NaCl$ high ?

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8. The elements of the third period of the Periodic Table are given below:

Group →	I	II	III	IV	V	VI	VII
Period ↓							
3	Na	Mg	Al	Si	P	S	Cl

(a) Which atom is bigger, Na or Mg? Why?

(b) Identify the most (i) metallic and (ii) non-metallic element in Period 3.

(c) Which is more non-metallic, S or Cl?

(d) Which has higher atomic mass, Al or Cl?

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9. State modern periodic law of classification of elements.

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10. Identify the type of reaction from the following equations:

(i)

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O \quad (ii) Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$

$(iii) CaO + H_2O \rightarrow \ \rightarrow Ca(OH)_2 \quad (iv) CuSO_4 + Zn \rightarrow ZnSO_4 + Cu$

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11. 2g of ferrous sulphate crystals are heated in a boiling tube.

(i) State the colour of ferrous sulphate crystals both before heating and after heating.

(ii) Name the gases produced during heating.

(iii) Write the chemical equation for the reaction.

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12. Give reason for the following:

(i) Electric bulbs are usually filled with chemically inactive gases like

nitrogen and argon.

(ii) Copper and aluminium wires are usually employed for electricity transmission.

(iii) Fuse wire is placed in series with the device.

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13. A carboxylic acid $C_2H_4O_2$ reacts with an alcohol in the presence of H_2SO_4 to form a compound 'X'. The alcohol on oxidation with alkaline $KMnO_4$ gives the same carboxylic acid, $C_2H_4O_2$. Write the name and structure of (i) Carboxylic acid, (ii) alcohol and (iii) the compound 'X'.

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14. The electronic configuration of an element 'X' is 2, 8, 8, 2. To which (a) period and (b)group of the modern periodic table does 'X' belong? State its valency. Justify your answer in each case.

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15. Four elements P, Q, R and S have atomic numbers 12, 13, 14 and 15 respectively. Answer the following questions giving reasons:

(i) What is the valency of Q ?

(ii) Classify these elements as metals and non-metals.

(iii) Which of these elements will form the most basic oxide?

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16. (a) Explain the steps for extraction of copper from its ore. Write the reaction involved.

(b) Draw a neat, labelled diagram for electrolytic refining of copper and explain the process.

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17. (a) Show the formation of magnesium chloride and sodium chloride by transfer of electrons.

(b) Identify the ions present in these compounds.

(c) Why do ionic compounds not conduct electricity in the solid state ?

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18. An organic compound 'X' on heating with conc. H_2SO_4 forms a compound 'Y' which on addition of one molecule of hydrogen in the presence of nickel forms a compound 'Z'. One molecule of compound 'Z' on combustion forms two molecules of CO_2 and three molecules of H_2O. Identify, giving reasons the compounds X,Y and Z. write the chemical equations for the reactions involved.

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19. State the number of water molecules present in crystal of washing soda and plaster of paris. What are these water molecules called as?

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20. Define the term 'metallurgy', and fill appropriate terms in the blanks :

The four major steps involved in metallurgy are:

(i)..... of ore.

(ii) Conversation of ore into its ..... .

(iii) Reduction of oxides of ores into ..... .

(iv) ..... of metal.

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21. State the meaning of functional group in a carbon compound. Write the functional group present in (i) ethanol and (ii) ethanoic acid and

also draw their structures.

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22. Based on the group valency of elements state the formula for the following giving justification for each :

(i) Oxides of 1st group elements,

(ii) Halides of the elements of group 13,

(iii) Compounds formed when an element of group 2 combines with an element of group 16.

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23. (a) Define the following terms:

(i) Valency, (ii) Atomic size

(b) How do the valency and the atomic size of the element vary while going from left to right along a period in the modern periodic table?

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24. Pure iron is soft and stretches easily when hot

(a) How does this property of iron change when:

(i) small amount of carbon is mixed with it?

(ii) nickel and chromium are mixed with it?

(b) Define an alloy. How is an alloy prepared?

(c) An alloy has low melting point and is therefore used for electrical fuse. Name the alloy and write its constituents.

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25. State the reason why carbon can neither form C^{4+} cation nor C^{4-} anions, but forms covalent compounds. Also reasons to explain why covalent compounds:

(a) are bad conductors of electricity?

(b) have low meeting and boiling points?

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26. Give reason for the following :

(a) Sodium metal is kept immersed in kerosene.

(b) Blue colour of copper sulphate disappers when a some aluminium powder is added in it.

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27. Solid calcium oxide was taken in a container and water was added slowly to it.

(i) State two observations made in the experiment.

(ii) Write the balanced chemical equation of this reaction.

or

Write balanced chemical equations for the following reactions :

(a) dilute sulphuric acid reacts with aluminum powder.

(b) dilute hydrochloric acid reacts with sodium carbonate.

(c) Carbon dioxide is passed through lime water.

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28. What are homologous series of carbon compounds ? Write the molecular formula of two consecuative members of homologous series of aldehydes. State which part of these compounds determines their (i) physical and (ii) chemical properties.

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29. Study the following table in which positions of six elements A,B,C,D,E and F are shown as they are in the modern periodic table.

Group → / Period ↓	1	2	3 - 12	13	14	15	16	17	18
2	A					B			C
3				D	E				F

On the basis of the above table, answer the following question :

(i) Name the element which form only covalent compounds.

(ii) Name the element which is a metal with valency three.

(iii) Name the element which is a non-metal with valency three.

(iv) Out of D and E, which is bigger in size and why ?

(iv) Write the common name for the family to which the elements C and F belongs.

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30. You are provided with a container made up of aluminium. You are also provided with solutions of dil HCl, dil HNO_3, $ZnCl_2$ and H_2O. Out of these solutions which solution, can bekept in the aluminium container ? Name the type of reaction taking place.

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31. (a) Why do we classify elements ?

(b) What were the two criteria used by Mendeleev in creating his Periodic Table ?

(c) Why did Mendeleev leave some gaps in his Periodic Table?

(d) In Mendeleev's Periodic Table, why was there no mention of Noble gases like Helium, Neon and Argon?

(e) Would you place the two isotopes of chlorine , Cl-35 and Cl-37 in different slots because of their different atomic masses or in the same slot because their chemical properties are the same ? Justify your answer.

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32. When hydrogen gas is passed over heated copper (II) oxide, copper and steam are formed. Write the balanced chemical equation for this reaction and state (i) the substance oxidized and (ii) the substance reduced in the reaction.

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33. With the help of an example, explain the process of hydrogenation. Mention the essential conditions for the reaction and state the change in physical property with the formation of the product.

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34. What is the difference between the molecules of soaps and detergents, chemically ? Explain the cleansing action of soaps.

or

How many groups and periods are there in the modern periodic table ? How do the atomic size and metallic character of elements vary as we move :

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35. Write balanced chemical equations for the following statements :

(i) NaOH solution is heated with zinc granules

(ii) Excess of carbon dioxide gas is passed through lime water

(iii) Dilute sulphuric acid reacts with sodium carbonate

(iv) Egg shells are dropped in hydrochloric acid

(v) Copper (II) oxide reacts with dilute hydrochloric acid.

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36. Explain why carbon forms compounds mainly by covalent bond. Explain in brief two main reasons for carbon forming a large number of compounds. Why does carbon form strong bonds with most other elements ?

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37. Write the number of covalent bonds in the molecular of ethane.

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38. Write a chemical equation to deceribe how baking soda is produced on a large scale .

Also write chemical name of the products obtained .

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39. Illustrate any three chemical properties of acids. With examples.

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40. List two tests for experimentally distinguishing between an alcohol and a carboxylic acid and describe how these tests are performed .

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41. Two elements 'P' and 'Q' belong to the same period of the modern periodic table and

are in Group-1 and Group-2 respectively. Compare their following characteristics in

tabular from:

(a) The number of electrons in their atoms

(b) The sizes of their atoms

(c) Their metallic characters

(d) Their tendencies to lose electrons

(e)The formula of their oxides

(f) The formula of their chlorides

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42. (a) A student dropped a few pieces of marble in dilute hydrochloric acid contained in a test tube. The evolved gas was passed through lime water. What changes would be observed in lime water ? Write balanced chemical equations for both the changes observed.

(b) State the chemical property in each case on which the following uses of baking soda are based:

(i) as an antacid (ii) as a constituent of baking powder.

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43. Both soap and detergent are some type of salts. What is the difference between them?

Describe in brief the cleansing action of soap. Why do soaps not form lather in hard water?

List two problems that arise due to the use of detergents instead of soaps.

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44. Name the substance oxidised and the substance reduced, and also identify the oxidising agent and reducing agents in the following reactions :

(a) $3MnO_2 + 4Al \rightarrow 3Mn + 2Al_2O_3$

(b) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$

(c) $SO_2 + 2H_2S \rightarrow 3S + 2H_2O$

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45. What are covalent compounds ? Why are they different from ionic compounds ? List their characteristic properties .

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46. An element 'M' with electronic configuration (2,8,2) combines separately with $(NO_3)^-$, $(SO_4)^{2-}$ and $(PO_4)^{3-}$ radicals. Write the formula of the three compounds so formed . To which group and period of the Modern Periodic Table does the elements 'M' belong ? Will 'M' form covalent or ionic compounds ? Give reason to justify your answer.

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47. (a) Define a universal indicator. Mention its one use.

(b) Solution A gives pink colour when a drop of phenolphthalein indicator is added to it. Solution B gives red colour when a drop of methyl orange is added to it. What type of solutions are A and B and which one of the solutions A and B will have a higher pH value ?

(c) Name one salt whose solutions has pH more than 7 and one salt whose solution has pH less than 7.

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48. (a) Give a chemical test to distinguish between saturated and unsaturated hydrocarbon.

(b) Name the products formed when ethane burns in air. Write the balanced chemical equation for the reaction showing the types of energies liberated.

(c) Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction ?

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49. Write the name and structure of an alcohol with three carbon atoms in its molecule.

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50. A metal 'M' is found in nature as its carbonate. It is used in the galvanization of iron. Identify 'M' and name its ore. How will you convert this ore into free metal ?

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51. (a) In electrolysis of water, why is the volume of gas collected over one electrode double that gas collected over the other electrode ?

(b) (i) What is observed whern a solution of potassium iodide is added to a solution of lead nitrate taken in a test tube ?

(ii) What type of reaction is this ?

(iii) Write a balanced chemical equation to represent the above reaction.

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52. You are provided with three test tubes A, B and C which contain distilled water, acidic solution and basic solution respectively. If you are given blue litmus paper only, how will you identify the contents of each test tube ?

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53. An aldehyde as well as a ketone can be represented by the same molecular formula, say C_3H_6O. Write their structures and name them. State the relation between the two in the Language of science.

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54. An element 'X' has mass number 35 and number of neutrons 18. Write atomic number and electronic configuration of 'X'. Also write group number, period number and valency of 'X'.

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55. (a) Explain any two physical properties of ionic compounds giving reason.

(b) List any two metals found in free state in earth's crust. Where are they located in activity series ?

(c) Metals towards the top of the activity series can not be obtained from their compounds by reducing with carbon. Why?

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56. A carbon compound 'P' on heating with excess conc. H_2SO_4 forms another carbon compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated carbon compound 'R'. One molecule of 'R' on combustion, forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved.

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57. Write the balanced chemical equation with the state symbols of the following reaction : Solutions of Barium chloride and sodium sulphate in water react to give insoluble Barium sulphate and the solution of soium chloride.

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58. Write down important properties of ionic and solids.

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59. Write the chemical name of Plaster of Paris. Write the chemical equation of its preparation. Why should Plaster of Paris be stored in a dry place ?

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60. Complete the following chemical equations :

(i) $CH_3COOC_2H_5 + NaOH \rightarrow$

(ii) $CH_3COOH + NaOH \rightarrow$

(iii) $C_2H_5OH + CH_3COOH \xrightarrow{\text{Conc. } H_2SO_4}$

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61. Write the names given to the vertical columns and horizontal rows in the Modern Periodic Table. How does the metallic charcter of elements very on moving down a vertical column ? How does the size of atomic radius vary on moving left to right in a horizontal row ? Give reason in pupport of your answer in the above two cases.

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62. An element P(atomic number 20) reacts with an element Q (atomic number 17) to form a compound. Answer the following questions giving

reasons :

(a) Write the positions of P and Q in the Modern Periodic Table.

(b) Write the molecular formula of the compound when P reacts with Q.

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63. Write an activity to show the reaction of acids with metal carbonates and metal hydrogen carbonate salts.

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64. Both soap and detergent are some type of salts. What is the difference between them?

Describe in brief the cleansing action of soap. Why do saaps not form lather in head

water? List two problems that arise due to the use of detergents instead of soaps .

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65. How is the concentration of hydronium $\left(H_3O^+\right)$ ions affected when a solution of an acid is diluted?

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66. Write the structural formula of ethanol. What happens when it is heated with excess of conc. H_2SO_4 acid at 443 K? Write the chemical equation for the reaction, starting the role of conc. H_2SO_4 acid in this reaction.

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

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68. Na, Mg and Al are the elements of the 3^{rd} period of the Modern Periodic Table having group number 1, 2 and 13 respectively . Which one of these has the (a) highest valency (b) largest atomic radius, and (c) maximum chemical reactivity? Justify your answer stating the reason for each.

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69. (a) What is the importance of pH in everyday life ?

(b) How are sodium hydroxide and Cl_2 (Chlorine) gas produced from common salt. What is this process called?

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70. Why are certain compounds called hydrocarbons? Write the general formula for homologous series of alkenes and alkynes and also draw

the structure of the first member of each series. Write the name of the reaction that converts alkenes into alkanes and also write a chemical equation to show the necessary conditions for the reaction to occur.

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71. A compound 'X' on heating with excess conc. Sulphuric acid at 443K gives an unsaturated compound 'Y'. 'X' also reacts with sodium metal to evolve a colourless gas 'Z'. Identify 'X', 'Y' and 'Z'. Write the equation of the chemical reaction of formation of 'Y' and also write the role of sulphuric acic in the reaction.

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72. Decomposition reactions require energy either in the form of the heat or light or electricity for breaking down the reactants. Write one equations each for decomposition reactions where energy is supplied in the form of heat, light and electricity .

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73. 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in a test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing. Write the equation of the chemical reaction involved and the test to detect the gas. Name the gas which will be evolved when the same metal reacts with dilulte solution of strong acid.

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74. The pH of a salt used to make tasty and crispy pakoras is 9. Identify the salt and write a chemical equations for its formation. List its two uses.

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75. (a) Why are most carbon compounds poor conductors of electricity ?

(b) Write the name and structure of a saturated compound in which the carbon atoms are arranged in a ring. Give the number of single bonds present in this compound.

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76. A student addd few pieces of aluminium metal to two test tubes A and B containing aqueous solutions of iron sulphate and copper sulphate. In the second part of her experiment, the added iron metal to another test tubes C and D containing aqueous solutions of aluminium sulphate and copper sulphate.

In which test tube or test tubes will she observe colour change? On the basis of this experiment, state which one is the most reactive metal and why ?

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77. What is observed when a solution of sodium sulphate is added to a solution of barium chloride taken in a test tube? Write equation for the chemical reaction involved and name the type of reaction in this case.

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78. Carbon has four electrons in its valence shell. Which type of compounds can be formed by carbon atom and why ? Give any one example of such compounds.

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79. In the reaction :

$MnO_2 + 4HCI \rightarrow MnCl_2 + 2H_2O + Cl_2$

(a) Name the compound (i) oxidised, (ii) reduced.

(b) Define oxidation and reduction on its basis .

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80. 1 g of solid sodium chloride is taken in a clean and dry test tube and 2 mL of conc. Suphuric acid is added to it . If the gas evolved is tested first with dry and then with wet blue litmus paper, in which case will the litmus paper change colour? Give reason for your answer. what inference can be drawn about the nature of the evolved gas ? Support your answer with a chemical equation for the reaction.

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81. (a) For the perparation of cakes, baking powder is used. If at home your mother uses backing soda instead of backing powder, how will it affect the taste of the cake and why ?

(b) How is baking soda converted into baking powder?

(c) What makes the cake soft and spongy ?

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82. What happens when hydrogen is added to a vegetable oil in the presence of nickel? Name the reaction and write one difference between the physical property of the vegetable oil and the product obtained in the reaction. Write the role of nickel in this reaction.

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83. List in tabular form any three chemical on the basis of which metals and non-metals are differentiated.

State two ways to prevent the rusting of iron.

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84. Explain giving justification the trends in the following properties of elements, on moving , from left to right in a period, in the Modern periodic Table.

(a) Variation of valency. (b) Change of atomic radius .

(c) Metallic to non-metallic character. (d) Electronegative character.

(e) nature of oxides.

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85. (a) What was the basis of Mendeleev's Classification of elements ?

(b) List two achievements of Mendeleev's periodic tables.

(c) List any two observations which posed a challenge to Mendeleev's periodic law.

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Section B

1. What type of material is formed when aqueous solutions of sodium sulphate and barium chloride are mixed. Give the balanced chemical equation involved. Name the type of reaction it is?

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2. Write two tests you would perform to detect, whether the given colourless liquid is Acetic Acid or not.

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3. (a) How is pH paper used to find the pH of a solutions?

(b) The pH value of water is 7. What will be the pH value of (i) aqueous solution of sodium hydroxide and (ii) dil HCl.

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4. Name two salts each of calcium and magnesium which make the water hard?

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5. Match the important chemical given in column (A) with the chemical formulae given in Column (B).

Column (A)	Column (B)
(a) Plaster of Paris	(i) $Ca(OH)_2$
(b) Gypsum	(ii) $CaSO_4.\frac{1}{2}H_2O$
(c) Bleaching powder	(iii) $CaSO_4.2H_2O$
(d) Slaked lime	(iv) $CaOCl_2$

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6. What do you observe when dil. HCl is added on Zn pieces taken in a test tube? How would you identify the gas evolved? Write on use of this gas.

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7. A student perfomed the experiment of heating ferrous sulphate crystals in a boiling tube. He smelt fumes of a pungent gas and saw colours of ferrous sulphate disappear.

(i) Write the chemical formula of the pungent gas.

(ii) Why does the colour of crystal disappear ?

(iii) Identify the nature of this chemical reaction.

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8. What happens when acetic acid is added in a soluiotn of Na_2CO_3 in a test tube ? Write the equation for detecting the gas evolved.

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9. An iron nail is dipped in the solution of copper sulphate for about 30 minture, state the change in colour observed. Give the reason for the change.

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10. List two observations which you make when you add a pinch of soodium hydrogen carbonate to acetic acid in a test tube. Write the chemical equation for the reaction that occurs.

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11. A student took a small piece of solid quick lime in a china dish and poured over it a

small amount of water. List two changes he is likely to observe in the china dish

immediately after pouring water.

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12. When you add sodium hydrogen carbonate to acetic acid in a test tube, a gas liberates

immediately with a brick effervescence. Name this gas. Describe the

method of testing

this gas.

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13. While studying the double displacement reaction, the solutions of barium chloride and sodium sulphate are mixed together.

(i) What do you observe as soon as the two solutions are mixed together ?

(ii) What will happen in the above observation made by you after ten minutes ?

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14. What do you observe when you add a few drops of acetic acid to a test tube containing.

(a) phenolphthalein (b) distilled water (c) universal indicator (d) sodium hydrogen carbonate.

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15. (i) While studying the combination reaction on adding water to quick lime, name the product formed and write its colour.

(ii) While studying the decomposition reaction by heating ferrous sulphate crystals in a test-tube, a product is formed in the test-tube. Name the product and write it colour.

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16. A student adds a spoon full of powered sodium hydrogen carbonate to a flask containing ethanoic acid. List two main observations, he must note in his note book, about the reaction that takes place. Also write chemical equation for the reaction.

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17. What type of material is formed when aqueous solutions of sodium sulphate and barium chloride are mixed. Give the balanced chemical equation involved. Name the type of reaction it is ?

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18. A gas is liberated immeiately with a brisk effervescence, when you add acetic acid to sodium hydrogen carbonate power in a test tube. Name the gas and describe the test that confirms the identify of the gas.

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19. (a) How is pH paper used to find the pH of a solution?

(b) The pH value of water is 7. What will be the pH value of (i) aqueous solution of sodium hydroxide and (ii) dil. HCl.

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20. Mention the essential material (chemicals) to prepare soap in the laboratory. Describe in brief the test of determining the nature (acidic/alkaline) of the reaction mixture of saponification reaction.

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21. In the laboratory of a school , the sample of hard water is not available " to study the comparative cleaning capacity of a sample of soap in soft and hard water". Which salt from the laboratory can be added to tap water to make it hard ? In the experiment how is cleaning capacity of soap compared ?

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22. In a school laboratory the students are studing the properties of ethanoic acid through certain experiments. How can they test its acidic

nature ? Give two tests .

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Set I Section B

1. How it can be proved that the basic structure of the Modern Periodic Table is based on

the electronic configurationof atoms of different elements?

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2. The electronic configuration of an element is 2, 8, 4. State its,

(a) group and period in the Modern Periodic Table. (b) name and write its one physical property.

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Set I Section C

1. 2 g of silver chloride is taken in a china dish and the china dish is placed in sunlight

for sometime. What will be your observation in this case? Write the chemical reaction

involed in the form of a balanced chemical equation. Identify the type of chemical

reaction.

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2. Identify the type of reactions taking place in each of the following cases and write the

balanced chemical equation for the reactions.

(a) Zinc reacts with silver nitrate to produce zinc nitrate and silver.

(b) Potassium iodide reacts with lead nitrate to produce potassium

nitrate and lead

iodide.

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3. Identify the acid and the base from which sodium chloride is obtained. Which type of

salt is it? When is it called rock salt? How is rock salt formed?

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4. Based on the group valency of elements write the molecular formula of the following compounds giving justification for each :

(i) Oxide of first group elements.

(ii) Halide of the elements of group thirteen, and

(iii) Compounds formed when an element, A of group 2 combines with an element, B of group 17.

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Set I Section D

1. (a) List in tabular form three chemical properties on the basis of which we can

differentiate between a metal and a non-metal.

(b) Give reasons for the following:

(i) Most metals conduct electricity well.

(ii) The reaction of iron (III) oxide $[Fe_2O_3]$ with heated aluminium is used to join

cracked machine parts.

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2. Write the chemical formula and name of the compound which is the active ingredient of

all alcoholic drinks. List its two uses. Write chemical equation and name

of the product

formed when this compound reacts with-

(i) sodium metal

(ii) hot concentrated sulphuric acid

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3. What is methane ? Draw its electron dot structure. Name the type of bonds formed in this compound. Why are such compounds :

(i) poor conductors of electricity ? and

(ii) have low melting and boiling points ?

(iii) What happens when this compound burns in oxygen ?

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Set I Section E

1. Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube a colour change will be observed? State the colour change and give its reason.

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2. What is observed when 2 mL of dilute hydrochloric acid is added to 1 g of sodium carbonate taken in a clean and dry test tube? Write chemical equation for the reaction involved.

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3. In three test tubes A, B and C, three different liquids namely, distilled water, underground

water and distilled water in which a pinch of calcium sulphate is dissolved, respectivley

are taken, Equal amount of soap solution is added to each test tube and the contents are

shaken. In which test tube will the length of the foam (lather) be longest? Justigy your

answer.

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4. A student is observing the temporary mount of a leaf peel under a microscope. Draw

labelled diageram of the structure (of stomata) as seen under the microscope.

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5. In the experimental set up to show that CO_2 is given out during respiration", name the

substance taken in the small the small test tube kept in the conical flask. State its function and the

consequences of its use.

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Set Ii Section B

1. Write the name, symbol and electronic configuration of an element X whose atomic number is 11.

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2. Can the following groups of elements be classified as Dobereiner's triad:

(a) Na, Si, Cl (b) Be, Mg, Ca

Atomic mass of $Be-9, Na-23, Mg-24, Si-28, Cl-35, Ca-40$. Justify your answer in each case.

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Set Ii Section C

1. Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether this compound is acidic, basic or neutral. Also write its pH value.

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Set Ii Section D

1. Write chemical equations for the following reactions:

(i) Calcium metal reacts with water.

(ii) Cinnabar is heated in the presence of air.

(iii) Manganese dioxide is heated with aluminium powder.

(b) What are alloys? List two properties of alloys.

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Set Iii Section C

1. List three advantages each of:

(i) exploiting resources with short term aims, and

(ii) using a long term perspective in managing our natural resources.

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2. Explain the following :

(a) Sodium chloride is an ionic compound which does not conduct electricity in solid state whereas it does conduct electricity in molten state as well as in aqueous solution.

(b) Reactivity of aluminium decreases if it is dipped in nitric acid.

(c) Metals like calcium and magnesium are never found in their free state in nature.

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Set Iii Section D

1. Write the main difference between an acid and a base. With the help of suitable examples

explain the term neutralization and the formation of-

(i) acidic,

(ii) basic and

(iii) neutral salts.

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Set I Section B

1. What happens when 5% alkaline potassium permanganate solution is added drop by drop to warm propyl alcohol (propanol) taken in a test tube? Explain with the help of a chemical equation.

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Set I Section C

1. What is the cause of dispersion of white light through a glass prism Draw a ray diagram to show the path of light when two identical glass prisms are arranged together in inverted position with respect to each other and narrow beam of white light is allowed to fall obliquely on one of the faces of the prisms.

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2. What is scattering of light? Use this phenomenon to explain why (i) the Sun appears reddish at sum-rise, and (ii) the clear sky appears blue.

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3. (a) Classify the following reactions into different types :

(i) $AgNO_3(aq) + NaCl(aq) \rightarrow AgCl(s) + NaNO_3(aq)$

(ii) $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$

(iii) $2KClO_3(s) \xrightarrow{\Delta} 2KCl(aq) + 3O_2(g)$

(iv) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

(b) Translate the following statement into a balanced chemical equation: "Barium chloride reacts with aluminium sulphate to give aluminium chloride and barium sulphate".

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4. When potassium iodide solution is added to a solution of lead (II) nitrate in a test tube, a precipitate is formed.

(a) What is the colour of this precipitate? Name the compound precipitated.

(b) Write the balanced chemical equation for this rection.

(c) List two types of reactions in which this reaction can be placed.

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5. A white powder is used by doctors to support fractured bones.

(a) Write the name and chemical formula fo the powder.

(b) How is this powder

(c) When this white powder is mixed with water, a hard solid mass is obtained. Write a balanced chemical equations for the changes.

(d) Give one more use of this white powder.

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6. How is the method of extraction of metals high up in the reactivity series different from that for metals in the middle ? Why can the same process not be applied for them ? Name the process used for extraction of these metals.

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Set I Section D

1. (a) Distingusih between esterfication and saponification reactions with the help of chemical equations for each.

(b) With a labelled digaram describle in brief an acitivity to show the formation of an ester.

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2. What is the difference between soaps and detergements ? State in brief the cleaing action of soaps is removing an oily spot from a fabric. Why are soaps not very effective whene a fabric is washed in hard water ? How is this problem resolved ? .

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3. (a) How is the valency of an element determined if its electronic configuration is known? Determine the valency of an element of atomic no. 9

(b) Given below are some elements of the Modern Periodic Table. Atomic numbers of the elements are given in the parentheses:

A(4), B(9), C(14), D(19), E(20)

(i) With the help of the electronic configuration, find out which one of the above elements will have one electron in its outermost shell?

(ii) Which rwo elements belong to the same group? Give reasons for your answer.

(iii) Which one of the above elements belonging to the fourth period has bigger atomic radius and why?.

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Set I Section E

1. A student mixes sodium sulphate powder in barium chloride powder. What change would the student observe on mixing the two powders? Justify your answer and explain how he can obtain the desired change.

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2. Arrange the following metals in the increasing order of their reactivities.

Copper, Zinc, Aluminium and Iron

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3. List two observation you would record in your notebook 30 minutes after adding iron filling to copper sulphate solution.

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4. A solution 'X' give orange colour when a drop of it falls on pH paper, while another solution 'Y' gives bluish colour when a drop of it falls on pH paper. What is the nature of both the solutoins? Determine the pH of solution 'X' and 'Y'?

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5. A student has to trace the path of way of light through a glass prism. List four precautions he should observe for better results.

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Set Ii Section C

1. Salt 'P', commonly used in bakery products, on heating gets converted into another salt 'Q' which itself is used for the removal of hardness of water and a gas 'R' is evolved. The gas 'R' when passed through freshly prepared lime water turns milky. Identify 'P', 'Q' and 'R', giving chemical equation for the justification of your answer.

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Set Ii Section D

1. (a) List two limitations of Newlands' Law of Octaves.

(b) Write the electronic configuration of two elements A and B whose atomic numbers are 20 and 17 respectively. Write the molecular formula of the compound formed when element A reacts with element B. State whether this compound is acidic, basic or neutral. Give reason to justify your answer.

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Set Iii Section B

1. "Conversion of ethanol of ethanoic acid is an oxidation reaction . " Justify this statement giving the relevant equation for the chemical reaction involved .

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Set Iii Section C

1. A metal X ,which is used in thermit process , when heated with oxygen gives an oxide Y which is amphoteric in nature . Identify X and Y. Write balanced chemical equation of the reaction of oxide Y with hydrochloric acid and sodium hydroxide .

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