

SAMAGRA SHIKSHA – KERALA

SECOND TERMINAL EVALUATION – 2018

CHEMISTRY

CLASS X • SOLVED QUESTION PAPER

Year: 2018

Set: A

Original Question Paper + Answer Section

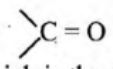
SAMAGRA SHIKSHA, KERALA
SECOND TERMINAL EVALUATION 2018
CHEMISTRY

Std: X

Score: 40
Time: 1½ hrs.**Instructions**

- First 15 minutes is given as cool-off time. This time is to be spent for reading the question paper.
- Answer according to the instructions
- Answer the questions considering the score and time.

Questions 1 to 5 carry 1 score each. Answer any four (4x1=4)

1. Which of the following metals can displace Fe from FeSO₄ Solution?
(Mg, Cu, Au, Ag)
2. Name the product formed when Vinyl chloride is subjected to polymerisation.
3. The Catalyst used in the manufacture of sulphuric acid is
4. Give the name of this functional group

5. Which is the gas formed when Magnesium reacts with hot water?

Questions 6 to 10 carry 2 Score each. Answer any four (4x2=8)

6. Two activities are given below.
Activity 1 : A Copper rod is dipped in FeSO₄ Solution
Activity 2 : A Zinc rod is dipped in FeSO₄ Solution
 - a) In which of these displacement reaction takes place?
 - b) Write down the chemical equation of the redox reaction taking place here.
7. Equal quantities of Sodium thiosulphate solution of same concentration are taken in two test tubes A & B. The test tube A is heated. In both the test tubes, equal quantities of hydrochloric acid are added.
 - a) In which test tube, the rate of reaction is faster?
 - b) Identify the yellow precipitate formed during the reaction.

Model Answer / Solution: Q1–5: Mg can displace Fe from FeSO₄; vinyl chloride gives PVC; vanadium compounds are used as catalyst in sulphuric acid manufacture; the HCO group is carbonyl; magnesium with hot water produces hydrogen.

ANSWERS / SOLUTIONS PAGE 1

Answer presentation: number each response exactly as in the question paper; use complete steps for 2-, 3-, 4- and 6-mark questions.

For numerical problems, show **Given** → **Formula** → **Substitution** → **Calculation** → **Final Answer with unit**.

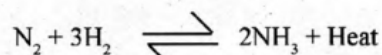
8. The Molecular formula of a carboxylic acid is $C_2H_4O_2$.
- Write down its structural formula.
 - Write down the IUPAC name of this compound.
9. Complete the table suitably.

Metal	Ore	Method of Concentration
Zinc	Zinc blende (ZnS)	(a).....
Tin	Tin stone (SnO_2)	(b).....

10. Cupric chloride solution is electrolysed using graphite electrodes.
- Which substance gets coated on the graphite electrode?
 - Write down the chemical equation of the reaction taking place at the anode.

Questions 11 to 15 carry 3 Score each. Answer any four. (4x3= 12)

11. The chemical equation given below represents the manufacture of ammonia.



What happens to the forward reaction under the following conditions.

- Concentration of Nitrogen is increased.
 - Ammonia is removed from the system.
 - Pressure is decreased.
12. $CH_3 - CH_2 - CH_2 - \underset{\substack{| \\ CH_2 - CH_3}}{CH} - CH_3$
- Name the word root of the longest Carbon chain.
 - Name the branch present in this compound.
 - Write down the IUPAC name of this compound.

Model Answer / Solution: Q6–10: Zn displaces Fe from FeSO₄ ($\text{Zn} + \text{FeSO}_4 \rightarrow \text{ZnSO}_4 + \text{Fe}$); increasing temperature generally increases reaction rate. Use the appropriate Electrochemistry/organic-chemistry terms shown in the paper.

ANSWERS / SOLUTIONS – PAGE 2

Answer presentation: number each response exactly as in the question paper; use complete steps for 2-, 3-, 4- and 6-mark questions.

For numerical problems, show **Given** → **Formula** → **Substitution** → **Calculation** → **Final Answer with unit**.

13. Sodium chloride solution is electrolysed
- Which type of energy change is taking place in this electrolytic cell?
 - Which substance is obtained at the cathode?
 - Write down any situation where electrolysis is made use of.
14. The following reactions represent the conversion of two ores of Zinc to Zinc oxide.
- (A) $\text{ZnCO}_3 + \text{heat} \longrightarrow \text{ZnO} + \text{CO}_2$
- (B) $2\text{ZnS} + 3\text{O}_2 + \text{heat} \longrightarrow 2\text{ZnO} + 2\text{SO}_2$
- Which one of the above reactions represent roasting?
 - How does roasting differ from calcination?
15. A few hints regarding a hydrocarbon are given below.
- There are 5 Carbon atoms in it.
 - There is a double bond at the second carbon atom.
- To which type of hydrocarbon does it belong? (Alkane/ Alkene/ Alkyne).
 - Write the structural formula of the compound.
 - Write down its IUPAC name.

Questions 16 to 20 carry 4 scores each. Answer any four (4x4= 16)

16. Choose the suitable terms from column B for the reactions given in column A.

	A	B
1	$\text{CH}_2 = \text{CH}_2 + \text{H}_2 \longrightarrow \text{CH}_3 - \text{CH}_3$	Polymerisation
2	$\text{CH}_3 - \text{CH}_2 - \text{CH}_3 \longrightarrow \text{CH}_2 = \text{CH}_2 + \text{CH}_4$	Substitution reaction
3	$\text{CH}_4 + \text{Cl}_2 \longrightarrow \text{CH}_3\text{Cl} + \text{HCl}$	Addition reaction
4	$n \text{CH}_2 = \text{CH}_2 \longrightarrow \text{[CH}_2 - \text{CH}_2\text{]}_n$	Thermal cracking

Model Answer / Solution: Q11 onward: Write balanced equations, identify the requested compounds/processes, and show calculation steps wherever numerical data are given.

ANSWERS / SOLUTIONS – PAGE 3

Answer presentation: number each response exactly as in the question paper; use complete steps for 2-, 3-, 4- and 6-mark questions.

For numerical problems, show **Given** → **Formula** → **Substitution** → **Calculation** → **Final Answer with unit**.

17. Aluminium is manufactured by the electrolysis of alumina.
- Name the method adopted for the concentration of bauxite, the ore of aluminium.
 - Why is cryolite added during the electrolysis of alumina?
 - Name the Cathode used in the electrolytic process.
 - Anode blocks are replaced frequently during the process. Why?
18. Structural formula of certain organic compounds are given below.
- $\text{CH}_3 - \text{O} - \text{CH}_2 - \text{CH}_3$
 - $\text{CH}_3 - \text{CH}_2 - \text{COOH}$
 - $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}$
- Select the pair of isomers from these?
 - Identify the type of isomerism shown by this pair.
 - Write down the structural formula and IUPAC name of the position isomer of $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}$.
19. A few electrodes and salt solutions are given below.
- Zn rod, Mg rod, Ag rod, MgSO_4 solution, AgNO_3 solution
- Identify the possible galvanic cell which can be made by using these materials.
 - Which is the anode of this cell?
 - Write down the equation of chemical reaction taking place at the cathode.
 - Suppose different galvanic cells are made using the above electrodes and suitable salt solutions. Under these conditions which metal acts as anode only?
20. Iron is manufactured using blast furnace.
- Name the principal ore of Iron.
 - Name the compound which reduces Iron oxide to Iron in this process.
 - What is the role of CaCO_3 in the manufacture of Iron?
 - Name the slag formed.

Model Answer / Solution: Q1–5: Mg can displace Fe from FeSO₄; vinyl chloride gives PVC; vanadium compounds are used as catalyst in sulphuric acid manufacture; the $\text{H}-\text{C}=\text{O}$ group is carbonyl; magnesium with hot water produces hydrogen.

ANSWERS / SOLUTIONS PAGE 4

Answer presentation: number each response exactly as in the question paper; use complete steps for 2-, 3-, 4- and 6-mark questions.

For numerical problems, show **Given** → **Formula** → **Substitution** → **Calculation** → **Final Answer with unit**.