

STD : X

CHEMISTRY

Score :40

Time : 1 ½ Hours

Instructions

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

Answer any 4 questions from 1 to 5. Each carries 1 score.

(4×1=4)

1. What is the maximum number of electrons that can be accommodated in *f* subshell? (1)
(2, 10, 6, 14)
2. What is the relation between the volume and number of molecules of a gas at constant temperature and pressure? (1)
3. Name the functional group. (1)



4. Which is the white precipitate obtained when a few drops of barium chloride solution are added to dilute sodium sulphate solution? (1)
5. Find the relation and fill in the blanks.

Copper pyrites : CuFeS_2

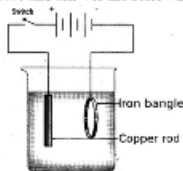
Zinc blende : -----

(1)

Answer any 4 questions from 6 to 10. Each carries 2 scores.

(4×2=8)

6. Analyse the picture and answer the following.



- a) Which solution is used as the electrolyte? (1)
- b) Write the chemical equation of the reaction taking place at the cathode of this cell. (1)

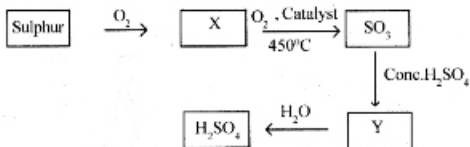
7. Which of the following statements are correct regarding chemical equilibrium? (2)
- At the equilibrium both the reactants and products coexist.
 - At chemical equilibrium the rate of forward reaction is greater than that of backward reaction.
 - Chemical equilibrium is static at the molecular level.
 - Chemical equilibrium is attained in a closed system.
8. C_2H_4 , A, C_4H_8 are the three successive members of a homologous series.
- Write the molecular formula of the compound A. (1)
 - To which category does this homologous series belong? (1)
(Alkane, Alkene, Alkyne)
9. a) Which metal among the following vigorously reacts with dilute HCl? (1)
(Fe, Zn, Mg, Pb)
- b) Write the chemical equation of the reaction between this metal and dilute HCl. (1)
10. Complete the table. (2)

Metal	Method of refining	Reason for selecting the method
Lead	------(a)-----	Low melting point
Cadmium	Distillation	------(b)-----

Answer any 4 questions from 11 to 15. Each carries 3 scores. (4×3=12)

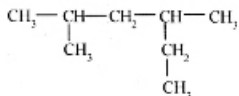
11. a) Which are the reactants used to prepare ammonia gas in the laboratory? (1)
- b) Which is the drying agent used in this preparation? (1)
- c) The jar used for collecting ammonia gas in the laboratory is kept inverted. Why? (1)
12. Bauxite is the main ore of Aluminium.
- Which method is used to concentrate bauxite? (1)
 - Electricity is used as the reducing agent in the manufacture of Aluminium. Why? (1)
 - Aluminium is obtained at which electrode during the electrolysis? (1)
13. 1 mol of any gas at STP has a volume of 22.4L.
- How many moles are present in 112L of SO_2 gas at STP? (1)
 - How many molecules are present in this much amount of SO_2 ? (1)
 - Calculate the mass of 112L of NH_3 gas at STP. (1)
- (Hint : Molecular mass of NH_3 = 17)

14. Complete the flow chart given below.



- a) Identify X and Y. (1)
 b) Which is the catalyst used in this process? (1)
 c) Sulphuric acid is formed also by the direct dissolution of sulphur trioxide in water. Still, sulphur trioxide is not directly dissolved in water. Why? (1)

15.

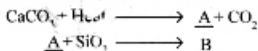


- a) How many Carbon atoms are there in the main chain of this compound? (1)
 b) Write the position numbers of the branches. (1)
 c) Write the IUPAC name of this compound. (1)

Answer any 4 questions from 16 to 20. Each carries 4 scores. (4×4=16)

16. Hematite is converted into iron in the blast furnace.

- a) Which compound is acting as the reducing agent in blast furnace? (1)
 b) Complete the following chemical equations. (2)



- c) What is the function of A in this reaction? (1)

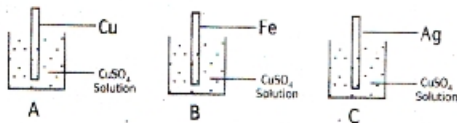
17. Complete the table. (4)

Compound	IUPAC Name
$\text{CH}_3 - \text{CH} = \text{CH}_2$	<u>(a)</u>
<u>(b)</u>	Methoxy ethane
$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3 \\ \\ \text{OH} \end{array}$	<u>(c)</u>
<u>(d)</u>	But - 2 - yne

18. Analyse the table and answer the questions. (The Symbols are not real)

Element	Period number	Group number
X	2	17
Y	3	2

- a) Write the sub shell electronic configuration of element X. (1)
- b) To which block of the periodic table does the element Y belong? What is its valency? (2)
- c) Write the molecular formula of the compound formed by the elements X and Y. (1)
19. Analyse the picture and answer the following.



- a) Which ion is responsible for the colour of the solution? (1)
- b) In which beaker does colour change occur? (1)
- c) Write the chemical equation of the reaction that causes colour change. (1)
- d) Different galvanic cells are constructed using the metals Cu, Fe and Ag. Which metal acts only as cathode? (1)
20. Two reversible reactions at equilibrium are given below.



- a) On which of this reactions does the pressure has no effect? Give reason. (2)
- b) How does the following conditions affect a reversible reaction. (1)
- 1) More reactants are added. (1)
 - 2) Products are removed. (1)