SECTION-I

QUESTION NO. 2 Write short answers any Eight (8) questions of the following

(1) The melting and boiling points of elements increase from left to right upto middle of S and P-Block element and decrease downward, why?
(2) How will you prove that phosphoric Acid is tribasic acid
(3) What are homo cyclic and heterocyclic compounds, give one example of each
(4) Give structures of ISO butyl chloride and ISO propyl chloride
(5) How ammonia reacts with acetic acid, give mechanism?
(6) Why ammonium nitrate is not used for paddy rice?
(7) Zinc Oxide is amphoteric in nature, write two chemical reaction in its favour
(8) Why SO₃ dissolves in H₂SO₄ but not in water?
(9) What is tautomerism? Give example
(10) Why Grignard reagent are reactive class of compound?
(11) What is difference between protein and polypeptide?
(12) Discuss reaction taking place in 1-7 days in setting of cement

QUESTION NO. 3 Write short answers any Eight (8) questions of the following

(1) Give Reaction of Mg with N₂ and Sulphar
(2) What is cement plaster and Hard Finish plaster
(3) Give four applications of Noble gases
(4) On what factors oxidizing properties of Halogens depends
(5) How ethyne is prepared on Industrial scale
(6) Define Markownikoff’s Rule. Give one example
(7) Define Fermentation. Give its condition
(8) How Bakelite is obtained from Formal dehyde
(9) Write a note on cellulose
(10) How proteins are denatured?
(11) Write a note on bleaching of paper pulp
(12) Define fertilizers. Which elements are necessary for plants

QUESTION NO. 4 Write short answers any Six (6) questions of the following

(1) Write four uses of sodium silicates
(2) Write the names of any two important lead pigment with their colour
(3) Why d- and f-block elements are called transition elements?
(4) What are chelates?
(5) What is the role of FeCl₃ and AlCl₃ in electrophilic substitution reaction
(6) Give two reactions which show that benzene is unsaturated hydrocarbon?
(7) How formalin is prepared on the commercial scale from Methyl alcohol?
(8) Justify that Cannizzaro’s reaction is self oxidation reduction reaction?
(9) Benedict’s solution reacts with aldehydes to give red ppt. Justify it

Note: Attempt any Three questions from this section

5.(a) What is the role of gypsum in industries?
(b) Write the Kolbe’s electrolytic method for the preparation of ethyne along with mechanism
6.(a) Give uses of Borax
(b) Write a note on Friedal crafts reaction
7.(a) Sulphuric acid acts as oxidizing agent and dehydrating agent, support your answer with two examples each
(b) What are B-Elimination reactions, Discuss its types?
8.(a) Write a brief note on nomenclature of oxy acids of halogen
(b) Give two reactions in each case in which C – O and O – H bond of alcohol is broken
9.(a) Define orbitals hybridization. Discuss structure of ethene on basis of hybridization?
CHEMISTRY, GROUP FIRST

OBJECTIVE

NOTE: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1. Keeping in view the size of atoms which order is the correct one
   (A) Mg > Sr  (B) Ba > Mg  (C) Lu > Ce  (D) Cl > I

2. Which gas is evolved at cathode during the electrolysis of brine in diaphragm cell?
   (A) H₂  (B) Na  (C) Cl₂  (D) O₂

3. Which metal is used in the thermit process because of its activity
   (A) Fe  (B) Cu  (C) Al  (D) Zn

4. The brown gas formed when metal reduces HNO₃ is
   (A) NO₂  (B) N₂O₅  (C) NO₂⁻  (D) NO

5. Which is the strongest acid?
   (A) HClO  (B) HClO₂  (C) HClO₃  (D) HClO₄

6. Co-ordination number of Pt in [PtCl(NO₂)(NH₃)₄] is
   (A) 2  (B) 4  (C) 1  (D) 6

7. Linear shape is associated with which set of hybrid orbitals?
   (A) Sp  (B) Sp²  (C) Sp³  (D) dSp²

8. Synthetic rubber is made by polymerization of
   (A) Chloroform  (B) Acetylene  (C) Divinylacetylene  (D) Chloroprene

9. During nitrification of benzene the active nitrating agent is
   (A) NO₃  (B) NO₂⁺  (C) NO₂⁻  (D) HNO₃

10. Which one of the following is not a nucleophile
    (A) H₂O  (B) H₂S  (C) BF₃  (D) NH₃

11. Rectified spirit contains alcohol about
    (A) 80 %  (B) 85 %  (C) 90 %  (D) 95 %

12. Which of the following compounds will not give iodoform test on treatment with I₂ / NaOH
    (A) Acetaldehyde  (B) Acetone  (C) Butanone  (D) 3-pentanone

13. Which of the following reagents will react with aldehydes and ketones
    (A) Grignard reagent  (B) Tollens reagent  (C) Fehling’s reagent  (D) Benedict’s reagent

14. Which reagent is used to reduce a carboxylic group to alcohol
    (A) H₂/NI  (B) H₂/Pt  (C) NaBH₄  (D) LiAlH₄

15. Which of these polymers is a synthetic polymer?
    (A) animal fat  (B) Starch  (C) Cellulose  (D) polyester

16. Micro-nutrient are required in quantity for plants growth ranging from
    (A) 4 – 40 g  (B) 6 – 200 g  (C) 6 – 200 Kg  (D) 4 – 40 Kg

17. The pH range of the acid rain is
    (A) 7 – 6.5  (B) 6.5 – 6  (C) 6 – 5.6  (D) less than 5
CHEMISTRY: GROUP FIRST

SECTION I

QUESTION NO. 2 Write short answers of any Eight (8) questions of the following

1. Give two dissimilarities of Hydrogen with I-A group elements
2. Diamond is a non conductor but graphite is a good conductor. Why?
3. Sulphuric acid acts as dehydrating agent. Give two examples
4. Give four differences of oxygen with sulphur
5. Define Functional group. Give two examples of oxygen containing functional groups
6. Define cis-trans Isomerism (7) Convert Ethyl bromide into (a) Ethane (b) n-Butane
7. What are Nucleophilic substitution reactions. Give an example
8. What are Zwitterions?
9. Explain acidic and basic behaviour of amino acids
10. Name calcareous and Argillaceous raw materials of cement
11. Describe Neutral sulphite semichemical process of pulping of paper

QUESTION NO. 3 Write short answers of any Eight (8) questions of the following

1. How gypsum is converted into plaster of paris?
2. Why the aqueous solution of Na₂CO₃ is alkaline in nature?
3. What is iodized salt?
4. Why HF is weaker acid than HCl?
5. What is Clemmensen reduction? Also give its reaction
6. A π(π) bond is weak bond as compared to a sigma (σ) bond. Justify it
7. What is difference between monohydric and polyhydric alcohols? Give one example of each
8. Which test is used to distinguish between methanol and ethanol?
9. Differentiate between thermoplastic and thermostetting polymers giving one example of each
10. What are carbohydrates and how are they classified?
11. Define environmental pollutant
12. What is chemical oxygen demand (COD)? How is it measured?

QUESTION NO. 4 Write short answers of any Six (6) questions of the following

1. Write four uses of Borax
2. What are SILICONES? Give an example
3. Write two properties of transition metals
4. Write IUPAC names of the following complexes (i) [Fe(CO)₅] (ii) K₂[PtCl₆]
5. What are polycyclic aromatic compounds?
6. What objections were raised on the Kekule’s structure for benzene molecule?
7. Write the general mechanism of Base catalysed addition reactions of carbonyl compounds
8. How does Formaldehyde react with (i) Conc. NaOH (ii) NaHSO₃
9. How HCHO and CH₃CHO are polymerized? Give chemical equations

Note: Attempt any Three questions from this section

5. (a) Write a note on peculiar behaviour of Beryllium
   (b) Write a note on acidic character of alkenes. Elaborate your answer with chemical equations
6. (a) What are Silicones? Write their four uses
   (b) How Aromatic Hydrocarbons are named? Give one example of each point
7. (a) How nitric acid is prepared by Birkeland and Eydde’s process
   (b) Differentiate between SN₂ and SN₁ reactions of alkyl halides
8. (a) Write chemical reactions of Fluorides of Xenon
   (b) How does phenol react with the following reagents (i) HNO₃ (ii) NaOH (iii) Zn (iv) Bromine water
9. (a) How organic compounds are classified? Give one example of each type
   (b) Describe with mechanism aldo - condensation reaction

SECTION II

10. Attempt any three parts from A, B, C, D and E

   (A) Write the qualitative analysis of cobalt radical in a systematic manner
   (B) Write the qualitative analysis of Magnesium radical in a systematic manner
   (C) (i) Write the qualitative analysis of iodide radical in a systematic manner
       (ii) How a salt can be identified by a smell
   (D) How will you identify Aldehydic group in an organic compound
   (E) How do you identify alcholic grouping of C₂H₅OH in the molecule

   Note: Attempt any five questions from this section

   3 x 5 = 15
OBJECTIVE

NOTE: You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

QUESTION NO. 1

1. Which one of the following is intermediate hydride?
   (A) Li H   (B) Mg H₂   (C) Ca H₂   (D) Sr H₂

2. Natron has the chemical formula
   (A) NaNO₃   (B) KNO₃   (C) Na₂ CO₃, H₂O   (D) Ca CO₃

3. Which one of following is used in cosmetics?
   (A) Tale   (B) Asbestos   (C) Sodium Sulphate   (D) Aluminum Sulphate

4. What is % age of calcium phosphate in bone ash?
   A) 20    (B) 40    (C) 60    (D) 80

5. Which one is chloration acid?
   (A) HClO   (B) HClO₂   (C) HClO₃   (D) HClO₄

6. Which one is non-typical transition element
   (A) Cr   (B) Mn   (C) Zn   (D) Fe

7. Which set of hybrid orbital has planier triangular shape
   (A) Sp³   (B) Sp   (C) Sp²   (D) dSp²

8. Which one is not a property or uses of mustard gas
   (A) Used in 1st world War   (B) Power full vesicant   (C) high boiling liquid   (D) high boiling gas

9. Which one is not a metal directing group
   (A) - COOH   (B) - CHO   (C) - COR   (D) - NH₂

10. For which step mechanism, the first step involved is the same
    (A) E₁ and E₂   (B) E₂ and SN-2   (C) SN-1 and E₂   (D) E₁ and SN-1

11. Which one will show the maximum repulsion with water
    (A) C₆ H₆   (B) C₂ H₅OH   (C) CH₃CH₂CH₂OH   (D) CH₃ OCH₃

12. Cannizaro’s reaction is not given by
    (A) HCHO   (B) CH₃ CHO   (C) C₆H₅ - CHO   (D) (CH₃)₃C CHO

13. Which one has yellow or orange crystalline ppt?
    (A) Acetone hydrazone   (B) 2,4-DNPH   (C) Ethanal oxime   (D) Bisulphite addition product

14. Which one is used in manufacturing of synthetic fiber
    (A) Formic acid   (B) oxalic acid   (C) Carbonic acid   (D) acetic acid

15. Which of these polymer is synthetic polymer
    (A) Starch   (B) animal fat   (C) polyester   (D) cellulose

16. Phosphorous helps the growth of
    (A) root   (B) leaf   (C) seed   (D) stem

17. Newspaper can be recycled again and again by how many times?
    (A) 2   (B) 4   (C) 3   (D) 5