

12TH CLASS GUESS PAPER – 2022.

CHEMISTRY.

CHAPTER NO. 1:

PERIODIC CLASSIFICATION OF ELEMENT AND PERIODICITY:

1. Ionization energy increases from left to right in a period? Justify the statement.
2. What is lanthanide contraction?
3. How does lanthanide contraction control the atomic size of elements of 6th and 7th periods?
4. Give any two resemblances of hydrogen with group IV-A
5. Justify the position of hydrogen at the top of VII A group.
6. d and f-blocks elements are called transition elements. Give reason.

LONG QUESTIONS.

1. Describe trend of metallic character in group and periods and discuss the impact of atomic size on it?
2. Define electron affinity. How does it vary in groups and periods generally in periodic table?
3. Explain similarities of hydrogen with halogens and dissimilarities with alkali metals.
4. What are hydrides? Write down their classification and the properties of the covalent hydrides.

CHAPTER NO. 2 S- BLOCK ELEMENTS.

SHORT QUESTIONS.

1. Write formulas of Borax and Chile salt peter?
2. Define alkali metals and alkaline earth metal.
3. How will you distinguish between ethanol and propanol?
4. What are the two major problems faced during the working of diaphragm cell?
5. Give formulas of i) Natron ii) Halite.

LONG QUESTIONS.

1. Discuss peculiar behavior of Li?
2. Describe the process for the preparation of sodium metal on industrial scale by Down's cell? What are advantages of this process?
3. Describe commercial preparation of Sodium hydroxide by diaphragm cell or Nelson cell.

CHAPTER NO. 3 GROUP IIIA AND GROUP IVA ELEMENTS.

SHORT QUESTIONS.

1. Write down the chemical reactions involved in Borax test.
2. Why aqueous solution of Borax is alkaline in nature?
3. How Borax is used as water softening agent?
4. Why are borate glazes preferred over silicate glazes?
5. Aluminum is not found in Free State give reason.
6. How and under what conditions does aluminum react with oxygen and hydrogen?
7. What are uses of Boric Acid.

LONG QUESTIONS.

1. Give the names along with the formulas of three important ores of aluminum.
2. How will you convert boric acid into borax and vice versa?

CHAPTER NO. 4**GROUP VA AND GROUP VIA ELEMENTS.****SHORT QUESTIONS.**

1. Why nitrogen is chemically inert at room temperature?
2. How NO_2 is prepared from?
3. How does HNO_2 acts as a reducing agent?
4. Write two reactions of preparation of nitrous acid.
5. Give definition of allotropy. Write allotropes of phosphorous?
6. Write two points of difference between Red and White phosphorus.
7. Give the balanced equation of reaction of Conc. H_2SO_4 with NaCl ?

LONG QUESTIONS.

1. What happen when HNO_3 dil and conc. HNO_3 react with the following?
i) Cu ii) Hg iii) Sn iv) Zn
2. Describe Birke land and Eyde's process for the manufacture of Nitric acid.
3. Discuss the various allotropes of phosphorus?

CHAPTER NO. 5**THE HALOGENS AND THE NOBLE GASES.****SHORT QUESTIONS.**

1. Halogens are strong oxidizing agents justify?
2. Why oxidizing power to halogens decreases down the group?
3. HF is a weak acid. Why?
4. Write the reaction of Cl_2 with hot NaOH .
5. What is meant by available chlorine?
6. What is bleaching powder? How it is prepared?

LONG QUESTIONS.

1. Write a brief note on nomenclature of oxyacid's of halogens.
2. How bleaching powder is prepared by Hasencleaver's method? Give its reaction with HCl and NH_3 .
3. What is Bleaching powder? How it is prepared commercially.

CHAPTER NO. 6**TRANSITION ELEMENTS.****SHORT QUESTIONS.**

1. Write two properties of Transition metals?
2. Which two transition element ions have strongest paramagnetic?
3. Why does damaged tin plated iron get rusted quickly?
4. Why most of the transition element form coloured compounds?
5. Why maximum paramagnetic strength is associated with the middle elements of d-block series?

LONG QUESTIONS.

1. Write a note : i) Binding energy ii) Paramagnetism.
2. Explain the following properties for transition element. I) Paramagnetic ii) Colour

CHAPTER NO. 7 FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY.

SHORT QUESTIONS.

1. What is vital force theory?
2. What is the modern definition of Organic chemistry?
3. What do you know about cracking of petroleum? Explain.
4. What is Catalytic Cracking?
5. Differentiate between homocyclic or heterocyclic compounds.
6. Define functional group. Give two examples of oxygen containing functional group.?
7. Define Tautomerism by giving one example.
8. Why is there no free rotation about a double bond but a free rotation about a single bond?

LONG QUESTIONS.

1. Explain cracking of hydrocarbons giving its two types.
2. Explain reforming of petroleum with the help of suitable example.
3. Difference between homocyclic and heterocyclic compounds with two examples each.
4. Explain any four features of organic compound.
5. What are aromatic hydrocarbons? How are they classified?

CHAPTER NO. 8 ALIPHATIC HYDROCARBONS.

SHORT QUESTIONS.

1. Compare the reactivities of alkanes and alkenes.
2. How is methane converted to formic acid.
3. Give four uses of methane?
4. Write effect of branching on melting point of alkanes.
5. What is Raney-Nickel? Where is it used.
6. How will you convert methane into ethane.
7. Write structural formulas of the following. a) But-1-ene-3-yne b) vinyl acetate.

LONG QUESTIONS.

1. Describe with examples the acidic nature of alkynes?
2. Write the Kolbe's electrolytic method for the preparation of Ethyne along with mechanism.
3. How will you synthesize the following compounds starting from Ethyne?
i) Acetaldehyde ii) Methyl nitrite iii) Ethane iv) Acrylonitrile.
4. Define polymerization, explain polymerization reaction of acetylene.

CHAPTER NO. 9 AROMATIC HYDROCARBONS.

SHORT QUESTIONS.

1. How is benzene prepared from sodium benzoate and phenol?
2. Write two objections that were raised on Kekule's structure for benzene molecule.
3. Describe the structure of Benzene on the basis of Resonance.
4. How is benzene prepared from the given compounds? a) n-Hexane b) Sodium benzoate.
5. Write down mechanism for Halogenation of benzene.
6. Give reaction of Benzene with SO_3 .
7. How will you prepare 2,4,4-trinitrotoluene from benzene in two steps.
8. How will you prepare m-chloronitro benzene from benzene in two steps?
9. What happens when chlorine is passed through Benzene in sunlight?

LONG QUESTIONS.

1. Convert Benzene into. i) Cyclohexane ii) Maleic acid iii) Glyoxal
iv) Benzene sulphonic acid.
2. How does benzene react with. i) Br_2 (in presence of sunlight) ii) H_2
iii) Cl_2 (in presence of FeCl_3) iv) CH_3Cl (in presence of AlCl_3)

CHAPTER NO. 10 ALKYL –HALIDES.

SHORT QUESTIONS.

1. Give an excellent method for the preparation of simple alkyl iodides?
2. Write down any two methods of preparation of alkyl halides.
3. Give the general pattern of the reactions of sn_2 mechanism.
4. What is Wurtz synthesis?
5. Write reaction to prepare tetra ethyl lead and Nitro ethane.

LONG QUESTIONS.

1. How will you prepare the following compounds from ethyl bromide?
2. Compare E_2 and E_1 mechanism for B-Elimination reactions.

CHAPTER NO. 11 ALCOHOLS, PHENOLS, ETHERS.

SHORT QUESTIONS.

1. Convert methanol to ethanol.
2. Why the name and structures of two polyhydric or polyhydroxy alcohols.
3. Differentiate between primary and secondary alcohols.
4. Ethanol has higher boiling point than diethyl ether. Give reason.
5. Write structural formulas of the following compounds. a) carboic acid b) glycerol
6. Draw flow sheet diagram for manufacture of methanol.

LONG QUESTIONS.

1. What is Lucas test? How will you distinguish between primary secondary and tertiary alcohols by this test?
2. Write reaction of phenol with. a) Zn b) Br_2 Water c) conc. HNO_3 d) conc. H_2SO_4
3. Explain following properties with reference phenol. i) Esterification ii) sulphonation.

CHAPTER NO. 12 ALDEHYDE AND KETONS.

SHORT QUESTIONS.

1. Convert calcium acetate to acetone.
2. How acetaldehyde is prepared in industry?
3. Convert acetaldehyde to tartaric acid.
4. Complete the following reactions. a) Formaldehyde + $NaHSO_3$ b) Acetone + $NaHSO_3$
5. How can you chemically distinguish between propene and propyne.
6. Write laboratory and industrial preparation of acetaldehyde.
7. Explain with mechanism the addition of sodium bisulphite to acetone, what are uses of this reaction?

LONG QUESTIONS.

1. What types of aldehydes give Cannizzaro's reaction? Give its mechanism.
2. Describe briefly the mechanism of nucleophilic addition to a carbonyl compound.
3. Describe with mechanism aldol condensation reaction. Why formaldehyde does not give this reaction?

CHAPTER NO. 13 CARBOXYLIC ACIDS.

SHORT QUESTIONS.

1. How is ethanol converted into ethanoic acid?
2. Draw structures of dimer of carboxylic acid.
3. Write down mechanism of the reaction of SOCl_2 with acetic acid?
4. What happens when carboxylic acid reacts with metals? Give one example.
5. Write down the structural formula of the following a) Acetic anhydride.
6. What is vinegar? How is it prepared from ethyl alcohol?
7. What is glacial acetic acid?

LONG QUESTIONS.

1. Give any four uses of acetic acid.

CHAPTER NO. 14 MACROMOLECULES.

SHORT QUESTIONS.

1. What are macromolecules? Give five examples.
2. What is the classification of polymer by keeping in view their structural aspects?
3. What is the degree of polymerization? Give two examples.
4. Where is starch found? How its structure made up.
5. Where is cellulose found? What its structure?
6. What do you mean by the rancidity of oils and fats?

LONG QUESTIONS.

1. What is the difference between a glycoside linkage and a peptide linkage?
2. Define saponification number and iodine number. Discuss the term rancidity.
3. What are nucleic acid? Write down the role of DNA and RNA in life.

CHAPTER NO. 15 COMMON CHEMICAL INDUSTRIES IN PAKISTAN.

SHORT QUESTIONS.

1. What are prospects of fertilizer industry in Pakistan?
2. Define cement? Give essential constituents of cement.
3. Just write five-stages involved in the manufacturing of Portland cement.
4. What is meant by setting of cement?

LONG QUESTIONS.

1. Describe the composition of a good Portland cement.
2. What are the prospects of paper industry in Pakistan?

CHAPTER NO. 16 COMMON CHEMICAL INDUSTRIES IN PAKISTAN.

SHORT QUESTIONS.

1. Give three examples of condensed aromatic hydrocarbon and give their names.
2. Write the reactions which give the evidence for the ring structure of benzene.
3. Prepare maleic acid from benzene.
4. What is difference between primary and secondary pollutants?
5. What is ozone hole?

LONG QUESTIONS.

1. Describe the natural and human sources of carbon monoxide, nitrogen oxide and sulphur oxide.
2. How is oil spillage affecting the marine life?
3. Discuss industrial waste effluents.