



SUPPLEMENTARY EXAMINATION 2019 'TARGET PAPER'

XII – CHEMISTRY PAPER – II (Science Groups)

Time Allowed: 2 Hours 40 mins.

Max.Marks: 68

SECTION 'B' (SHORT – ANSWER QUESTIONS)

(Marks: 40)

NOTE: Answer any TEN PART questions from this Section. Select FIVE PART questions from inorganic chemistry and FIVE PART questions from organic chemistry. All questions carry equal marks.

INORGANIC CHEMISTRY

Q-2

i) Refer to the list of given compounds, answer the following:

Compound	A	B	C	D
Name	Boric Acid or Blue Stone or Lunar Caustic	Gypsum or Bleaching Powder	Water Glass or Phitkari	Plaster of Paris or Caustic Soda or Epsom salt

*Give the chemical formula of B & C

*Write the equation for the action of heat on A

*Give the equation for the preparation of D

*Write one use of A or D

ii) Write the electronic configuration and identify the group, period and block of elements bearing the following atomic numbers: 17, 24, 29, 30, 49 **OR**

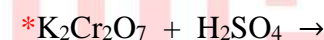
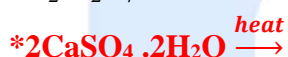
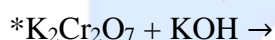
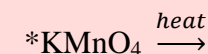
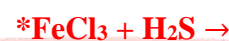
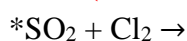
(a) Give the electronic configuration of II A and I B or IV A & VI B or I A & II B.

(b) Explain that the position of hydrogen is misfit in group IA or VIIA of the periodic table.

OR What are Ammonal, Aluminium Bronze & Dura Lumin? Mention their composition and uses. **OR**

Describe the electrolytic refining of Aluminium by Hoopé's electrolytic method with the help of diagram?

iii) Complete and balance the following equations: (ANY FOUR)



OR

Give balanced chemical equations for ANY FOUR of the following:

*Reaction between Chromium oxide, KOH and Bromine water.

*Zinc is put into conc. Sodium hydroxide solution. *Reaction of litharge with sodium chloride.

*Conc. Sulphuric acid is added to formic Acid.

*Hydrogen is passed over tungsten oxide

*Aluminium is treated with aqueous sodium hydroxide

*Litharge is heated with excess of air

*Carbon monoxide with chlorine

*Formic acid and Concentrated sulphuric acid

*CO₂ is passed through the aqueous solution of Soda Ash.

iv) Give reasons for ANY FOUR of the following:

*Atomic Hydrogen is more reactive than molecular hydrogen. *Hydrogen sulphide is a strong reducing agent.

*Most of the transition elements and their compounds are paramagnetic. *Nitric acid is a strong oxidizing agent.

*Why is heavy water heavy?

*EDTA is a chelating agent.

*The viscosity and boiling point H₂SO₄ are high.

*Alkaline earth metals are harder than alkali metals.

*Alkali metals are the powerful reducing agents.

*Aluminium is made passive by nitric acid.

*Graphite is a weak conductor of electricity.

*Diamond is the hardest known substance.

*Why is boric acid soft.

*Plaster of Paris is used in preparation of moulds in surgery.

*Na⁺ is smaller than Na atom.

*B₂O₃ is acidic while Al₂O₃ is amphoteric.

v) **What is Allotropy? Describe different allotropic forms of Sulphur (give reasons for softness & elasticity of sulphur) OR Carbon alongwith the diagram?**

OR

What is Water gas? How it is prepared from natural gas? Also write two methods for the separation of hydrogen from water gas.

OR

Discuss the group trends in 'p' block elements with respect to: (ANY FOUR)

*Ionisation Potential

*Electronegativity

*Hydration energy

*Melting Point

*Atomic Radii

vi) a) State the following laws:

*Newland's law of octave or Modern Periodic law

*Doberineir's Law of Triad

b) Describe the merits and demerits of Mendeleev's periodic table. OR

Explain ANY TWO of the following:

*Isotopes of hydrogen

*Complex and Metallic hydrides.

*Preparation of Atomic Hydrogen

OR

Draw the structures of H₂S or H₂SO₄ or HNO₃ in vapor and solid phase with bond length and bond angle. Also write chemical equation to show that HNO₃ is a strong oxidizing agent.

vii) Name the complexes by IUPAC System:

*[Fe(CO)₅]

*[Fe(H₂O)₆]⁺³

*Na₃[Co(NO₂)₆]

*[Cr(en)₃](NO₃)₃

*Ni(CO)₄

*K₄[Fe(CN)₆]

*[Pt(Cl)₆]⁻²

*[Zn(NH₃)₄]SO₄

*[Co(en)₃]Cl₃

*NH₄[Cr(NCS)₄(NH₃)₂]

OR

Define ligands. Give the classification of ligands based upon the no. of coordination atoms with examples and also draw the structures of Chelating agent and chelate.

OR

What is Aqua Regia? How does it dissolve gold? Give the reaction.

viii) **How is chlorine manufactured on large scale by Nelson cell or Castner Kellner's cell? Write auto-oxidation reduction reaction of chlorine.**

OR

Define Metallurgy? Describe Serpeck's or Baeyer's method for the purification of Bauxite ore. When is this method used?

ORGANIC CHEMISTRY

ix) **Define the following:**

*Refining of Petroleum

*Conjugated Proteins

*Rancidification

*Homologous Series

*Metamerism

*Catenation

*Peptide linkage

*Oxonium ion

*Reforming

*Etching

*Glycosidic Linkage

*Cracking

*Saponification

*Polymerisation

*Acid value

*Triglycerides

OR

Explain:

*Polymerisation and its types

*Isomerism and its types

x) (a) **Give two reactions in which benzene ring is not retained? OR**

Explain saponification of oils and fats with the help of chemical equation. Write the names of the products formed. OR Discuss stability of Benzene?

(b) **Discuss the reactions of benzene with chlorine in the presence of Lewis acid catalyst and absence of sunlight?**

OR What is rancidification? Mention its causes. OR

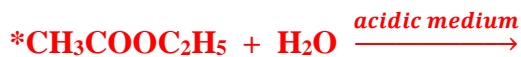
Explain the acidity of ethyne with the help of chemical equations.

OR Give the classification of organic compounds. Discuss with examples? OR Describe natural sources of organic compounds.

xi) **What is Photochemical reaction? Discuss the free radical reaction mechanism of chlorination of Methane in the presence of sunlight.**

OR What are Phenols? How are they classified? Explain their acidic characteristics with the help of equation. **OR**
What are Alcohols? Classify monohydric alcohols.

xii) **Complete the following reactions: (ANY FOUR)**



OR

What are nucleophilic additions? Explain the chemical properties of formaldehyde with the help of following heads. Give only one reaction for each: (ANY FOUR)

*oxidation reaction

*Addition of HCN

*Reduction reaction

*Polymerisation

*Formation of Acetal

*Formation of Phenyl Hydrazine

xiii) **Draw and explain the orbital structure of Ethyne.**

OR

What is Fermentation? How is Ethyl alcohol manufactured from starch or molasses?.

xiv) **Write the structural formulae and give the IUPAC names of the following: (ANY FOUR)**

*meta xylene

*T.N.T

*Mustard gas

*p-cresol

*Diethyl acetylene

*2-pentenoic acid

*triacylglycerol

*Benzophenone

*Adipic acid

*aniline

*Nicotinic acid

*acetic anhydride

*Neo valeric acid

*Caproic acid

*Picric acid

*Resorcinol

* α -Naphthol

*Ethyl ethanoate

*Vinyl bromide

*Carbolic acid

*Ethandioic acid

*Triphenyl bromomethane

*Neo Butyric acid

*2-Pentendioic acid

*Isopropyl butanoate

*Trichloro methyl benzene

*4-chloro-2-methyl-1-butene

*Ethene glycol

*Ethyl ter-butyl ether

xv) **Give Chemical test to distinguish between the following:**

*Alkane and Alkyl halide

*n-hexane and benzene

*Aldehyde and Ketone (Propanal or Propanone)

*Alkene and Alkyne

*Reducing and non-reducing sugars

*Saturated and unsaturated compounds

OR What are Carbohydrates or Amino acids? Classify them and also Give their biological importance?

What is Markownikoff's rule and Oxonium ion? Explain with example.

xvi) **What are organometallic compounds? How is Grignard's reagent prepared from Alkyl halide? Starting from**

CH_3MgI Prepare the following: *Ethanol *Ethanoic acid (acetic acid) *Propane *3° alcohol

OR Define ortho, para and meta directing groups? How will you obtain the following compounds from benzene? (ANY FOUR)

*Acetophenone

*Isopropyl benzene

*Bromobenzene

*P-nitro benzoic acid

*m-nitrotoluene

*Benzoic acid

*Carbolic Acid



You



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SECTION 'C'
(DETAILED-ANSWER QUESTIONS)

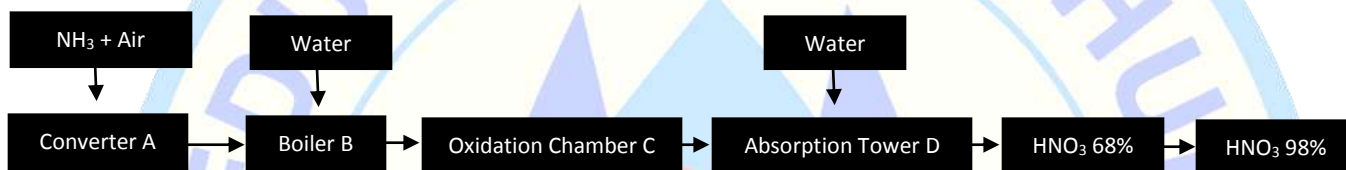
(Marks: 28)

NOTE: Attempt any **ONE** question from **INORGANIC CHEMISTRY** and **ONE** Question from **ORGANIC CHEMISTRY**.

INORGANIC CHEMISTRY

Q-3

a) The flow chart for the manufacturing of Soda Ash by Ammonia Solvay Process is as follows:



*Give the chemical reactions in stages A, C, D with conditions.

*Describe the conditions to get 95% oxidation of NH₃ and NO and how 98% HNO₃ obtained.

OR

Name three oxyacid of Sulphur? Explain how oil of vitriol (Sulphuric Acid) is manufactured on large scale by Contact Process? Also Draw the flow diagram. Also show by chemical equations that sulphuric acid behaves as a dehydrating agent, oxidizing and sulphonating agent.

b) Alongwith equations, explain the extraction of Blister Copper from its roasted pyrite ore?

OR

Write the defects in Mendeleev's periodic table. What are short & long periods of the periodic table? Discuss the long form of periodic table on the basis of electronic configuration?

c) Write Short notes on ANY TWO of the following:

*Photography

*Lunar Caustic

*Thermite Process

*Glass

*Lead pigments

*Alums

*Bleaching Powder

*Boric Acid

*Down's Process

*Blue Vitriol

*Borax

*Corrosion and its prevention

*Silvering of Mirror

*Potassium Permanganate

Q-4

a) Write ANY FOUR Industrial Preparations of Hydrogen gas? (Except electrolysis of water)

OR

What is meant by binary compounds of Hydrogen? Give their classification and properties of any Saline, Covalent, Polymeric, Complex hydrides with equations.

OR

What will be the action of heat on the following:

*CH₄

*H₂B₄O₇

*MgCO₃

*CuSO₄.5H₂O

*AgNO₃

*MgSO₄

*KMnO₄

*Mg(OH)₂

b) Discuss the following general characteristics of transition elements:

*Crystal field theory (color of transition elements)

*Variable oxidation states

*Magnetic Properties

*Interstitial compounds

*Catalytic properties

OR

Give diagram for the extraction of pure Aluminium from Aluminium oxide?

c) Give the balance chemical equation to show that how NaOH reacts with :

*Chlorine gas

*Boric Acid

*Ferric chloride

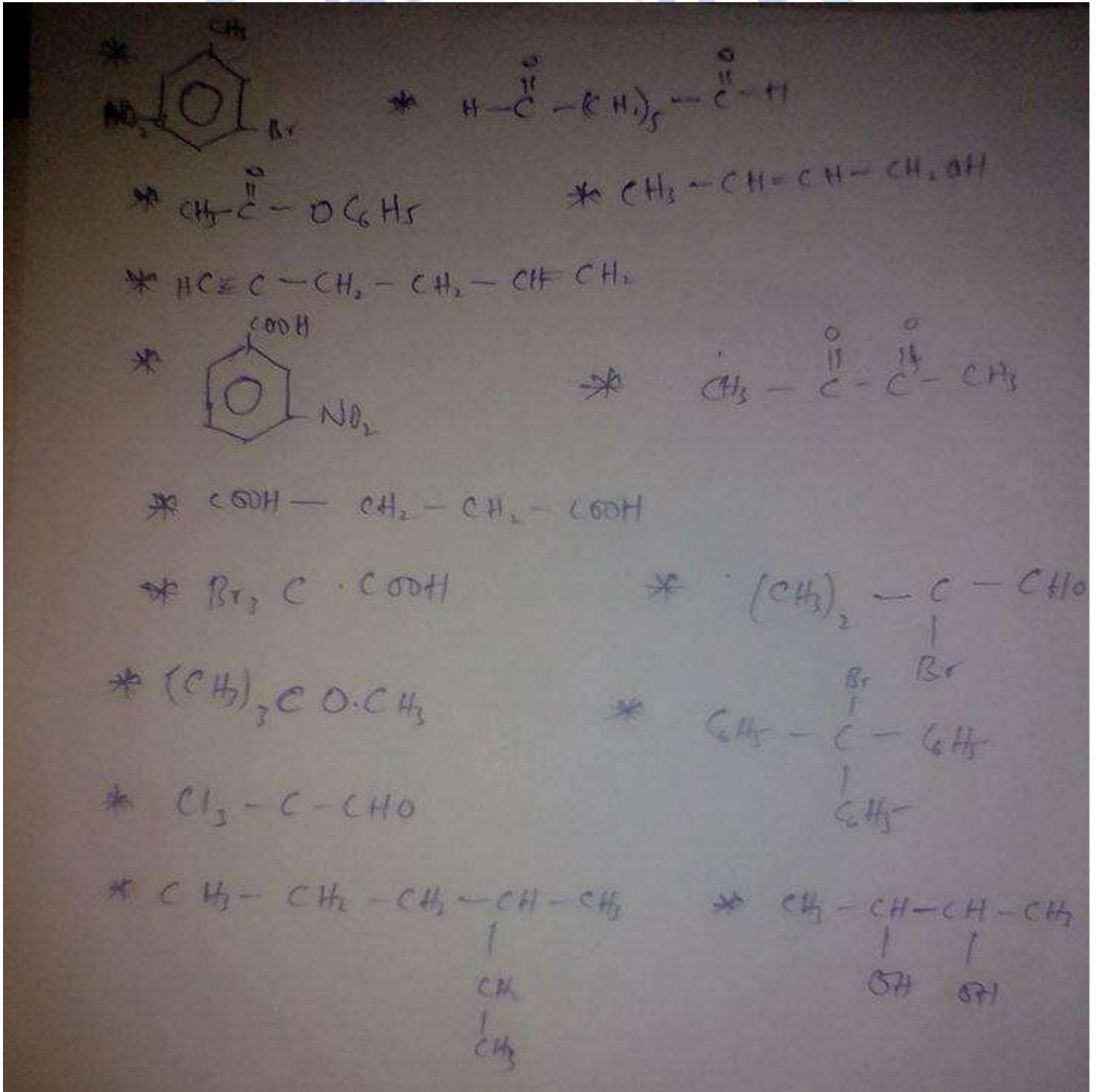
*Zn⁺²

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ORGANIC CHEMISTRY

Q-5

- a) What is Aromaticity? Draw the Resonance structures of benzene. What objections are raised on Kekule structure of Benzene? How was it defended.
- b) Name the following by IUPAC System:



- c) Differentiate between the following with examples:

*Aromatic and Aliphatic Hydrocarbons

*Oils and Fats

OR

Give Equations for the following reactions:

*Ethyl Alcohol with Alcoholic KOH.

*Tertiary butyl chloride with NaOH

*Cannizaro's reaction

*Iodoform from acetone

*Acetal from methanol

*dehydrohalogenation of 1, 2 dichloroethane

*Sodium benzoate with soda lime

*Ethanol with isopropyl magnesium bromide

*acetyl chloride reacts with ammonia

*Pyrolysis of acetic acid

*polymerization of formaldehyde

*Distillation of calcium acetate

*Phenol reacts with Zinc dust

*Ethanol is treated with conc. Sulphuric acid

*Fehling's solution

*Tollen's reagent

*Polymerisation of acetylene

*Sulphur mono chloride with ethylene

*Acetylene reacts with HgSO₄

*Formation of Oxime

Q-6

- a) **Why benzene undergoes electrophilic substitution reactions? Describe the Halogenation, Nitration, Sulphonation and Friedal Craft's Acylation mechanisms of benzene. OR Discuss Aldol Condensation and ethers?**
- b) **Write a NOTE on ANY TWO of the following:**
*Vitamins *Plastics *Proteins *Enzymes *Detergents
- c) **What are Elimination reactions? Write the mechanisms of E₁ and E₂ reactions.**
OR
What are SN reactions. Compare the mechanisms of SN₁ and E₁ reactions. **OR What are nucleophilic substitution reactions. Outline the stepwise reaction mechanism of the following:**
*SN² reaction between Bromo methane and NaOH
*SN¹ reaction between 2-Chloro 2-propyl methane and NaCN

----- **BEST OF LUCK** -----

 Marked with **RED** are the '**MOST IMPORTANT**' Questions.

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