

BOARD OF INTERMEDIATE EDUCATION, KARACHI

INTERMEDIATE EXAMINATION

MODEL PAPER 2026

CHEMISTRY PAPER – II

Max. Marks: 68

(Science Pre-Engineering & Pre-Medical Groups)

Time: 2 Hours 40 minutes

SECTION 'B'

According to New Book

(SHORT-ANSWER QUESTIONS) Marks : 36

Note: Answer any **Nine** part questions. Select **Four** part questions from **Inorganic – General Chemistry** and **Five** part questions from **Organic Chemistry**. All part questions carry equal marks.

INORGANIC – GENERAL CHEMISTRY

2. i) Define the flame test. Briefly explain why alkali and alkaline earth metals produce colored flames in this test. State the flame colors for any two alkali metals.

OR

Give reasons for any **four** of the following:

- * Boiling point of halogens increases down the group in the periodic table.
- * Electronegativity decreases regularly from top to bottom in s-block elements.
- * Alkali metals are good conductor of electricity.
- * Fluorine is the strongest oxidizing agent.
- * Multidentate ligands are known as chelating agents.

- ii) Write the three properties of beryllium that show its unique behavior in group II A. Also write the reason why beryllium does not react with cold water and steam?

- iii) Define d-block elements, why do they form colored compounds? Explain it in term of Crystal Field Theory.

- iv) Write IUPAC names of the following complexes:



- v) Describe the preparation and two properties of Nylon and Polyvinyl chloride.

- vi) Define green house gases. How green house gases cause to global warming?

- vii) What information about the structure of a molecule we can get from mass spectroscopy? Give the applications of mass spectroscopy.

ORGANIC CHEMISTRY

- viii) Define Bucky ball. Explain its structure and write two properties.

OR

Define Homologous series and write its three general properties.

- ix) Two organic compounds **A** and **B** are given below:



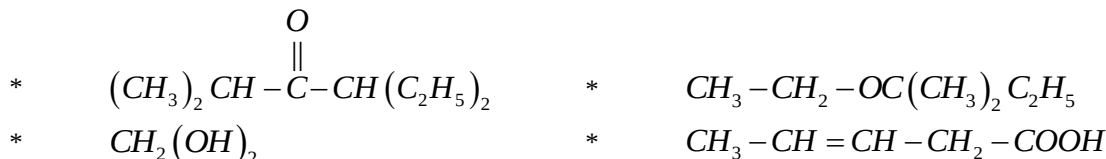
- * Draw the orbital structure of compound **A** and specify:
 - * Hybridization * Bond angles
- * Write the ozonolysis reactions of **A** and **B** under suitable conditions.

OR

Give the equations and write the name of the final product in the following process.

- * Ethyne is treated with hydrogen bromide.
- * 1,2-dibromoethane is heated with alcoholic KOH.
- * Ethene is treated with oxygen in presence of peracetic acid at 100 °C.
- * Ethyne is treated with H_2O in the presence of $H_2SO_4/HgSO_4$.

- x) Write the IUPAC names of any four of the following:



- xi) Identify each of the following with one laboratory test:

* Alcohol * Phenol * Alkene * Aldehyde

OR

Define chiral carbon and plane polarized light. Explain optical isomerism briefly.

- xii) Define organometallic compounds. Give two examples of organo metallic compounds. Write the equation of methyl magnesium iodide with:



- xiii) Why are amines basic in nature? How can we prepare ethyl amine from the following compounds?

* ethyl iodide * methyl cyanide * ethanamide

- xiv) Name four derivative of carboxylic acid and write the equations of their preparation.

Continued on the next page.....

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SECTION 'C'
(DETAILED-ANSWER QUESTIONS) Marks : 32

Note: Answer any **Four** questions — **Two** question from **Inorganic – General Chemistry** and **Two** from **Organic Chemistry**. All questions carry equal marks.

INORGANIC – GENERAL CHEMISTRY

3. Explain with the help of diagram of Castner Kellner cell, how caustic soda is obtained by electrolysis of aqueous sodium chloride. Write two advantages and disadvantages of the Castner Kellner process.
4. Write the balance chemical equations for the following:
- * A mixture of carbon and silicon is heated under elevated temperature.
 - * Phosphorus is put into water.
 - * Bleaching powder is treated with hydrochloric acid.
 - * Chlorine gas is passed through hot aqueous solution of caustic soda.
 - * Copper is treated with concentration nitric acid.
 - * A piece of chromium is put into dilute hydrochloric acid.
 - * Reaction between KMnO_4 and FeSO_4 in the presence of H_2SO_4 (write ionic equation)
 - * Reaction between $\text{K}_2\text{Cr}_2\text{O}_7$ and FeSO_4 in the presence of H_2SO_4 (write ionic equation)

OR

Describe various steps involve in the extraction of 99.99% pure copper from its chalcopryrite ore. (Draw diagram where necessary)

5. Define Troposphere and stratosphere. Describe the chemistry involved due to the presence of oxides of carbon and nitrogen in the troposphere. (Write equations where necessary)

ORGANIC CHEMISTRY

6. What is meant by orientation of benzene? Explain ortho-para and meta directing group. Write the equation for the preparation of TNT and m-nitro toluene from benzene.
7. Draw the structure of the following organic molecules:
- | | | |
|-----------------------|---------------------------|---------------------|
| * Isopropyl butanoate | * Ethyl neo-pentyl ether | * Divinylacetylene |
| * p-cresol | * Pyrogallol | * Neo Pentyl iodide |
| * Benzamide | * Benzene-1, 4-dioic acid | |

OR

Write the equations for the following reactions:

- * Oxidation of 2°-alcohol with $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4$
- * Reaction of phenol with H_2SO_4 at 20°C
- * Reaction of propanone with hydroxyl amine.
- * Ethanol, in excess, is heated up to 140°C in presence of H_2SO_4
- * Dehydration of ethyl alcohol at 170°C in conc. H_2SO_4
- * Reaction of ethylene glycol with periodic acid.
- * Reduction of acetone with LiAlH_4
- * Oxidation of 1°-alcohol with PCC.

8. Define β – elimination reaction. Discuss the mechanism of E_1 and E_2 reactions with example.

OR

Define protein. Discuss types of protein on the bases of their function (any three). Write two properties and two biological importance of protein.

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BOARD OF INTERMEDIATE EDUCATION, KARACHI

INTERMEDIATE EXAMINATION

MODEL PAPER 2026

CHEMISTRY PAPER – II

Max. Marks: 17

(Science Pre-Engineering & Pre-Medical Groups)

Time: 20 minutes

According to New Book

SECTION 'A'

(MULTIPLE CHOICE QUESTIONS) – (M.C.Qs.) (Marks : 17)

NOTE:

- This section consists of 17 part questions and all are to be answered. Each part question carries one mark.
- Do not copy the part questions in your answerbook. Write only the answer in full against the proper number of the question and its part.
- The use of scientific calculator is allowed

1. Choose the correct answer for each from the given options:

- The oxidation states of the elements of group VII A:
* +1 and +3 * -1, +5 and -5 * -3, +3 and +5 * -1, +1, +3, +5 and +7
- This s-block element form super oxide when burn in air:
* *Li* * *Na* * *K* * *Mg*
- The metal is used in making jewelry and also serve as catalyst:
* *Pt* * *Fe* * *Pb* * *Al*
- The coordination number of *Ni* in the complex compound $[Ni(en)_2(NO_2)_2]^{+2}$:
* 4 * 6 * 2 * -2
- The knocking of internal combustion engine can be reduced by the following petroleum process:
* Reforming * Refining * Distillation * Condensation
- Welding gas among the following is:
* Ethene * Ethane * Methane * Ethyne
- This pairs of compounds represent functional group isomerism:
* 1-butene and 2-butene * Ethanol and dimethyl ether
* n-butane and iso butane * Diethyl ketone and methyl propyl ketone
- Benzene burns with Smokey flame because of its:
* Inflammability * High carbon percentage
* High resonance energy * Aromaticity
- SN^2 reaction occurs most easily if the substrate molecule is:
* Methyl iodide * Ethyl iodide * 2-Iodo propane * 2-Iodo 2- methyl Propane
- Lucas reagent is a mixture of:
* *Zn* and *Hg* * *Zn* and *HCl*
* *ZnCl₂* and *HCl* * *NaOH* and *CaO*
- Clemmensen reduction is the conversion of aldehydes and ketones into:
* Alkanes * Alkenes * Alkyl halides * Alcohols
- Formic acid is naturally found in:
* Venom of ants * Bee sting * Vinegar * Butter
- Saponification is the formation of soap by the reaction fat and oil with:
* Sugar * *HCl* * An Alkali * Glycerol
- Drugs that lower the body temperature to normal are known as:
* Antibiotics * Antipyretic * Antiallergic * Anti histamines
- This element is used to build strong bones and teeth:
* *Zn* * *Ca* * *Fe* * *Mg*
- Ozone is produced in the stratosphere region due to photo chemical reaction of sun rays and:
* *CFCs* * *NO₂* * *NO* * *O₂*
- Infra-red spectroscopy is a technique use to determine:
* Double and triple bonds * Mass to charge ratio
* Functional group * Conjugated system

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