



# PRACTICAL CENTRE

B-14, Block# 1, Gulshan-e-Iqbal, Karachi. Phone: 34976530-34812547-34984762

## Comprehensive Examination - 2026

(According to the syllabus of the Board of Secondary Education, Karachi)

Time : 3 Hours

### CHEMISTRY (IX)

Max. Marks : 60

#### SECTION "A" (COMPULSORY) MULTIPLE CHOICE QUESTIONS (12 Marks)

Note: (i) Attempt all the questions.

(ii) Each question carries ONE mark.

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

i. Molecular formula of acetic acid is  $\text{CH}_3\text{COOH}$ , its empirical formula is:

- \* CHO                      \*  $\text{CH}_2\text{O}$                       \*  $\text{C}_2\text{H}_2\text{O}$                       \*  $\text{CH}_2\text{O}_2$

ii. The molar mass of  $\text{H}_2\text{SO}_4$  is:

- \* 98 a. m. u                      \* 98 g                      \* 9.8 a. m. u                      \* 9.8 g

iii. Atomic number of Potassium (K) is 19 and mass number is 39, number of neutrons will be:

- \* 19                      \* 20                      \* 39                      \* 58

iv. Orbitals in M-shell of an atom is /are:

- \* s                      \* s&p                      \* s, p, & d                      \* s, p, d&f

v. 6<sup>th</sup> period of elements, in the modern periodic table is known as:

- \* Shortest period                      \* Short period  
\* Long period                      \* Longest period

vi. Across a period, the shielding effect of inner electrons:

- \* Increases                      \* Decreases                      \* Remain changing                      \* Remain same

vii. This type of bond is formed, when Magnesium (E. N=1.2) combines with Oxygen (E. N = 3.4):

- \* Ionic                      \* Covalent                      \* Coordinate                      \* Metallic

viii. A covalent bond will be "Polar" if electro negativity (E.N) difference between bonded atoms is:

- \* Between 0-0.4                      \* Between 0.4-1.7  
\* Between 0 - 1.7                      \* 1.7 or more

ix. Tea left in a saucer cools quickly than a cup, because of:

- \* Surface area                      \* Temperature                      \* Pressure                      \* Intermolecular forces

x. Molecular mass of NaOH is 40 amu, its semi molar solution contains:

- \*  $1\text{g}/\text{dm}^3$                       \*  $10\text{g}/\text{dm}^3$                       \*  $20\text{g}/\text{dm}^3$                       \*  $40\text{g}/\text{dm}^3$

xi. Bronze is an alloy of:

- \* Fe & C                      \* Cu & Zn                      \* Cu & Sn                      \* Cu, Zn & Sn

xii. Which groups of elements in the periodic table has high electronegativity?

- \* IA                      \* IIA                      \* VIIA                      \* VIIIA

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- Q.8** What is meant by solution? Define components of a solution.  
OR Define molarity. Give its formula and unit. **OR** State and explain Henry's law.  
OR Differentiate between any **ONE** of the following:  
 (a) Dilute & Concentrated solution  
 (b) Unsaturated, saturated & Super saturated solution
- Q.9** Define electrolytic cell. Describe its construction. (Draw diagram)  
OR Define electrolysis. Explain electrolysis of molten KCl.  
OR Examine any one of the following chemical equations:  
 Identify the substance undergoes Oxidation & Reduction, and the substance acts as Oxidizing & Reducing agent:  
 (a)  $\text{Zn} + \text{Cl}_2 \longrightarrow \text{ZnCl}_2$   
 (b)  $\text{H}_2\text{S} + \text{Br}_2 \longrightarrow 2 \text{HBr} + \text{S}$
- Q.10** What is rusting? Enlist some methods used to prevent rusting and explain anyone.  
OR Enlist names of any three alloys, their composition and one use.  
OR Differentiate between any one of the following:  
 (a) Oxidation & Reduction (b) Oxidizing agent & Reducing agent  
 (c) Electrolytes & non-electrolytes (d) Strong electrolytes & Weak electrolytes
- Q.11** Write chemical formula & one use of one compound of each Sodium, Magnesium and Calcium.  
OR Write down important applications of Mercury, Silver, Gold or Platinum.  
OR Differentiate between any one of the following:  
 (a) Soft & Hard metals (b) Alkali & Alkaline earth metals
- Q.12** Give reason Why? (any **THREE**)  
 (a) Cs (Cesium) an alkali metal, loses electron, when exposed to sunlight.  
 (b) Gasoline is immiscible with water?  
 (c) NaCl is an electrolyte but can't conduct electric current in solid state.  
 (d) We can't observe BEC (Bose-Einstein condensate), in nature.  
 (e) Air is a solution containing O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub> and other gases. Why N<sub>2</sub> gas is called solvent.  
 (f) Ionization Energy, Electron Affinity, and Electronegativity show same trends across a period.
- Q.13** Solve any **ONE** numerical from the following:  
 (i) Calculate molar mass of glucose (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>) and find the number of moles or molecules in 90g.  
 (ii) At constant temperature, the volume of a gas at 15dm<sup>3</sup> at 10 atm. Find its volume at 15 atm.  
 (iii) Calculate M/M % concentration of the solution obtained by dissolving 25g salt in 125g water.

**SECTION 'C' (DESCRIPTIVE ANSWER QUESTIONS) (24 Marks)**

**Note:** Attempt any **FOUR** Questions from this section. Each question carries 6 Marks.

**Q.14** Describe Rutherford gold foil experiment which led him to the discovery of Nucleus.

OR Describe Bohr's atomic model. Also give its limitations.

OR Describe discharge tube experiment with labelled diagram and state what were the justification and conclusion of J. J. Thomson in this respect.

**Q.15** Explain demarcation of the periodic table as s, p, d & f blocks.

OR State and explain Mendeleev's periodic law. Describe three advantages and **THREE** disadvantages of Mendeleev's periodic table.

OR An element has seven electrons in M-shell.

Answer any **THREE** parts of the following:

- Write down its electronic configuration, determine its atomic number, and identify the element.
- Write down to which group of the periodic table it belongs.
- Write down any four common characteristics of the group from which it belongs to.
- What does the elements of this group call? Explain.

**Q.16** What is Ionic or electrovalent bond? Explain formation of ionic bond in NaCl.

OR Define Co-ordinate covalent bond? Explain formation of Co-ordinate bond in  $\text{NH}_4\text{Cl}$ .

**Q.17** State and Explain Boyle's law or Charles' law. Derive expression and draw graph also.

OR Prove that modern atomic theory of De-Broglie is related with Einstein and Plank's equations.

**Q.18** State and explain Faraday's first or second law of electrolysis.

OR What is electroplating? How can a steel spoon be electroplated with Chromium. Explain with electrode reactions. Also draw a labelled diagram of the electrolytic cell.

**Q.19** Define Solubility. Enlist the names of factors which affect the solubility of a substance.

Explain the effect of solute-solvent nature, on solubility of a substance.

OR Differentiate between any **ONE** of the following:

- Element, Compound & Mixture
- Ionic & Covalent Compounds
- Solution, Colloid & Suspension
- Metals, Non-metals & Metalloids

### Important Information:

#### Chapter 01 (Fundamentals of Chemistry)

#### Short Answered Questions

- Define: Mole, Avogadro's number, Molecular mass, Formula mass and Molar mass, Matter, Atom, Molecule, Element, Substance, Valency, Empirical formula and molecular formula, Molecular ion, Free radical.
- Give Relationship between Mole and Avogadro's number.
- Calculation of Molecular mass, Formula mass and Molar mass of:

$\text{Al}_2\text{O}_3$	$\text{Mg}(\text{OH})_2$	$\text{CaCO}_3$	$\text{C}_2\text{H}_5\text{OH}$	$\text{KNO}_3$	$\text{H}_2\text{SO}_4$	$\text{C}_6\text{H}_{12}\text{O}_6$
$\text{H}_2\text{CO}_3$	$\text{NH}_3$	$\text{CH}_4$	$\text{CO}_2$	$\text{NaCO}_3$	$\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$	$\text{Al}_2(\text{SO}_4)_3$

- Balance the following equations by inspection method.
  - \*  $\text{NO}_2 + \text{H}_2\text{O} \rightarrow \text{HNO}_3 + \text{NO}$
  - \*  $\text{NaHCO}_3 \rightarrow \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$
  - \*  $\text{CO} + \text{O}_2 \rightarrow \text{CO}_2$
  - \*  $\text{NO}_2 \rightarrow \text{NO} + \text{O}_2$
  - \*  $\text{NH}_3 + \text{O}_2 \rightarrow \text{NO} + \text{H}_2\text{O}$
  - \*  $\text{Ca} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$
  - \*  $\text{CS}_2 + \text{O}_2 \rightarrow \text{CO}_2 + \text{SO}_2$
  - \*  $\text{NH}_3 \rightarrow \text{N}_2 + \text{H}_2$
  - \*  $\text{CaCO}_3 + \text{HCl} \rightarrow \text{CaCl}_2 + \text{H}_2\text{O} + \text{CO}_2$
  - \*  $\text{SO}_2 + \text{O}_2 \rightarrow \text{SO}_3$
  - \*  $\text{KNO}_3 \rightarrow \text{KNO}_2 + \text{O}_2$
  - \*  $\text{KClO}_3 \rightarrow \text{KCl} + \text{O}_2$
- Complete and Balance the following equations..
  - \*  $\text{N}_2 + \text{H}_2 \rightarrow$
  - \*  $\text{NH}_3 + \text{O}_2 \rightarrow$
  - \*  $\text{CS}_2 + \text{O}_2 \rightarrow$
  - \*  $\text{NO}_2 + \text{H}_2\text{O} \rightarrow$
  - \*  $\text{KNO}_3 \rightarrow$
  - \*  $\text{Ca} + \text{H}_2\text{O} \rightarrow$
  - \*  $\text{NaHCO}_3 \rightarrow$
  - \*  $\text{CO} + \text{O}_2 \rightarrow$
  - \*  $\text{NO}_2 \rightarrow$
  - \*  $\text{NH}_3 \rightarrow$
  - \*  $\text{SO}_2 + \text{O}_2 \rightarrow$
  - \*  $\text{CaCO}_3 + 2\text{HCl} \rightarrow$
  - \*  $\text{KClO}_3 \rightarrow$
- Differentiate between: Empirical formula & Molecular formula, Atomic mass & Mass number, Atom & Ion, Compound & Mixture, Atomic number & Atomic Mass.

#### Long Answered Questions

- What are the applications of chemistry in daily life?
- Define Chemistry. Name the branches of chemistry and discuss any them.

#### Chapter 02 (Atomic Structure)

#### Short Answered Questions:

- Calculation of number of electrons, protons and neutrons from atomic number and atomic mass numbers of elements.
- Write main postulates of Bohr's atomic theory.
- Write electronic configuration of elements having atomic number 1-20
- What are isotopes? Discuss different isotopes of Hydrogen.
- Differentiate between: Shell and Sub-shell (Orbit & Orbital)

#### Long Answered Questions

- In the light of Rutherford's gold foil experiment, discuss the structure of an atom and its limitations also draw diagram.
- Discuss discharge tube experiment along with properties of cathode rays also draw diagram.
- Write down the applications of isotopes in daily lifeless important.

## **Chapter 07 (Electrochemistry)**

### **Short Answered Questions:**

- Differentiate: Oxidation and Reduction, Electrolyte and Non-electrolyte, Anode and Cathode, Oxidizing agent and Reducing agent.
- What is alloy? Discuss formation of alloy and example of alloy.

### **Long Answered Questions**

- What is electrochemical cell? Write its application. Discuss construction and working of Dry cell and Lead Storage battery.
- What is electroplating? Discuss silver and tin plating.
- What is corrosion (Rusting)? Discuss methods of prevention of corrosion.
- State and Explain Faraday's First and Second law of electrolysis and Numericals of first law.

## **Chapter 08 (Chemical Reactivity)**

### **Short Answered Questions:**

- Differentiate: Metal and Non-metal, Metalloids, Alkali metals and Alkaline earth metals, Sodium and Iron, Cation and anion.
- Write chemical formulae, chemical names and one use of: Soda ash, Baking soda, Table salt, Sodium nitrate, Slaked lime, Gypsum, lime stone.
- Give reason why:
  - \* The acidic strength of halogen acid is  $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$ .
  - \* Metals are electropositive in nature.
  - \* Alkali metals are more reactive than alkaline earth metals.
  - \* Noble metals are inert.
- Write chemical properties and uses of Sodium, Magnesium & Calcium

### **Long Answered Questions**

- Explain importance of Silver and Gold.
- Discuss reactivity of halogens and write a chemical test for identification of  $\text{Cl}^-$  and  $\text{I}^-$ .
- Differentiate between soft and hard metals.

## Chapter 03 (Periodic Table and Periodicity of Properties)

### Short Answered Questions:

- What is shielding effect? Discuss influence of shielding effect in periodic table.
- Discuss general characteristics of Alkali metals, Alkaline earth metals, Halogens and Noble gases.
- Define: Periodic table, Periodicity, Atomic radius, Ionization energy.
- Discuss trends of Atomic radius, Ionization potential, Electronegativity and Electron affinity.

### Long Answered Questions

- State Mendeleev's periodic law. Discuss advantages and defects of Mendeleev's periodic table. How it provides a base for modern periodic table.
- State Modern periodic law. Discuss periods of modern periodic table.
- Determine the demarcation of periodic table in to s, p, d and f blocks.

## Chapter 04 (Chemical Bonding)

### Short Answered Questions:

- Define: Metallic bond, Hydrogen bonding, Dipole-Dipole interaction.
- Differentiate between: Polar bond and Non-polar bond, Ionic compound and Covalent compound, Coordinate (Dative) and Covalent bond.
- Draw dot and cross structures of:  $\text{H}_2\text{O}$ ,  $\text{NH}_3$ ,  $\text{BF}_3$ ,  $\text{O}_2$ ,  $\text{N}_2$ ,  $\text{Cl}_2$ ,  $\text{CH}_4$ ,  $\text{C}_2\text{H}_4$ ,  $\text{C}_2\text{H}_2$ ,  $\text{HCN}$ ,  $\text{H}_2$ ,  $\text{F}_2$ .

### Long Answered Questions

- What is Ionic bond and Ionic compound? Discuss stepwise formation of ionic bond in  $\text{NaCl}$ . Write properties of ionic compounds.
- What is Covalent bond? Discuss its type with example.
- What is Dative or Co-ordinate covalent bond and explain it with example of  $\text{NH}_4\text{Cl}$  and  $\text{H}_3\text{O}^+$ .
- Define metallic bond. How metallic bond is form? Write characteristics of metals.

## Chapter 05 (Physical States of Matter)

### Short Answered Questions:

- Write a note on: Plasma, Evaporation, Boiling point, Vapour pressure.
- Differentiate between Crystalline and Amorphous solids,
- How Kinetic Molecular Theory differentiates states of matter.
- Define: Allotropy, Density, Melting point, Sublimation, Diffusion, Effusion, Freezing point.

### Long Answered Questions

- State and explain Boyle's and Charle's law along with Numericals.

## Chapter 06 (Solutions)

### Short Answered Questions:

- Define: Solution, Solute, Solvent.
- Differentiate: Solute and solvent, Dilute and concentrated solution, Saturated, Unsaturated and Super saturated solution and Molality,
- Numericals of Molarity, Molality, Mole fraction, Percentage and Dilution of solution.
- Give reason why:
  - \* Colloidal solution show Tyndall effect.
  - \* Polar solute not dissolve in non-polar solvent.
  - \* Gasoline does not dissolve in water.

### Long Answered Questions

- What is solubility? Discuss effect of temperature and nature of solute and solvent on solubility.
- Differentiate among Solution, Colloids and Suspension.



# ADAMJEE COACHING CENTRE

Comprehensive Examination 2025-26

Chemistry – I For IX

Time: 03 Hours

Max. Marks 60

## Section "A" Multiple Choice Questions (MCQs)

Note: (i) Attempt all the questions from this section.

(ii) Do not copy down the part questions. Write only the answer against the proper number of the question and its part according to the question paper.

(iii) Each question carries 01 mark.

Q1. Choose the correct answer for each from the given options.

- i. This alloy is called bronze:  
(\*) Cu-Sn                      (\*)Cu-Zn                      (\*)Al-Ni-Co                      (\*)Cu-Zn-Sn
- ii. This one acts as reducing agent:  
(\*)O                              (\*)Br                              (\*)Na                              (\*)S
- iii. Down a group, Electropositivity is:  
(\*)Decreased                      (\*)Increased                      (\*)Remains same                      (\*)None
- iv. Conversion of solid into gas is called:  
(\*)Melting                      (\*)Evaporation                      (\*)Sublimation                      (\*)Boiling
- v. This is an exothermic process:  
(\*)Sublimation                      (\*)Melting                      (\*)Boiling                      (\*)Combustion
- vi. The power of an atom to attract the shared pair of electrons is called:  
(\*)Electronegativity                      (\*)Electropositivity                      (\*)Ionization energy                      (\*)None
- vii. Along a period, Atomic radii:  
(\*)Decrease                      (\*)Increase                      (\*)Remain same                      (\*)Some times change
- viii. The concept of circular orbits was given by:  
(\*)Bohr                              (\*)Rutherford                              (\*)De Broglie                              (\*)Schrodinger
- ix. Neutrons were discovered by:  
(\*)Bohr                              (\*)J. J Thomson                              (\*)Goldstein                              (\*)Chadwick
- x. Valency of carbon is:  
(\*)1                              (\*)2                              (\*)3                              (\*)4
- xi. By decreasing external pressure, Boiling point. is:  
(\*)Decreased                      (\*) Increased                      (\*)Unchanged                      (\*)Sometime changed
- xii. This is a covalent compound:  
(\*)HI                              (\*)KI                              (\*)NaCl                              (\*)CaO

#### Section "B" (Short Answer-Question) (Marks: 24)

**Note: Attempt any EIGHT (8) questions from this section. Each question carries 3 marks.**

Q2. Define: Physical Chemistry, Analytical Chemistry and Organic Chemistry.

Q3. Calculate the number of moles and molecules present in 0.36 g of glucose ( $C_6H_{12}O_6$ ).  
(atomic mass C = 12, H = 1, O = 16)

Q4. Differentiate between sodium and iron as soft and hard metal.

Q5. What are isotopes? Explain the isotopes of hydrogen.

Q6. What is meant by Tyndall effect? How it is use for the identification of a true solution and colloidal?

Q7. Give Reason: (any 3)

- Why does Potassium have more shielding effect than sodium?
- Why is fluoride ion not considered a neon atom?
- Why hydrogen and oxygen are considered elements whereas water is a compound?
- Why doesn't sugar solution scatter light?
- Why is a saucer used to cool tea quickly?

Q8. Write down the electronic configuration of the following elements:

- (a) Ca-20      (b) N-7      (c) Si-14

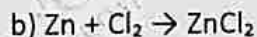
OR

Write chemical formula with chemical names of:

- (a) Baking soda      (b) Table salt      (c) Lime stone

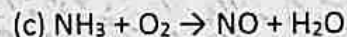
Q9. Examine the following chemical reactions and identify:

**Oxidizing agent, Reducing agent, Substance undergoes oxidation & Substance undergoes reduction**



Q10. Define Atomic radius & Ionization potential and give their trends along the period and down the groups.

Q11. Balance the following equations:



Q12. What is the mass of oxalic acid ( $C_2H_2O_4$ ) present in 100 cm<sup>3</sup> of 2 molar solution?

(atomic mass C=12, O=16, H = 1)

Q13. Draw dot and cross structures for the following molecules:



OR

Complete the following table.

Number of protons	Number of neutrons	Number of electrons	Atomic Number	Mass Number
32				73
	14	14		

#### Section "C" (Detailed- Answer Question) (Marks: 24)

**Note: Attempt any FOUR (4) questions from this section. Each question carries 6 marks.**

Q14. Discuss discharge tube experiment for the discovery of electron along with properties of cathode rays also draw diagram.

Q15. Determine the demarcation of periodic table in to s, p, d and f blocks.

Q16. What is Ionic bond and Ionic compound? Discuss stepwise formation of ionic bond in NaCl. Write three properties of ionic compounds

Q17. What is a secondary cell? Discuss construction and working of a Lead Storage battery with diagram.

OR

What is electroplating? Discuss silver (OR) tin plating in detail

Q18. State and Explain Faraday's First and Second law of electrolysis

Q19. Explain the process of electrolysis in an electrolytic cell. Sketch the electrolytic cell for electrolysis of molten potassium chloride and identify cathode, anode, oxidation, reduction reactions, and movement of electrons in the cell.

## PREPARATION PAPER – 2025-26

### CLASS – IX CHEMISTRY

#### SHORT DEFINITION:

<b>Ch # 01</b> Ion Free Radical Valency Element Relative Atomic Mass Molecular Mass Formula Mass Mole Avogadro's Number	<b>Ch # 02</b> Isotopes Atomic Number Mass Number Electronic Configuration Aufbau Principle	<b>Ch # 03</b> Ionization Energy Atomic Radius Electron affinity Electronegativity Shielding effect Periodicity
<b>Ch # 04</b> dipole - dipole forces Hydrogen Bonding Metallic Bonding malleable ductile unpaired electron bond pair lone pair valence electron	<b>Ch # 05</b> Absolute zero Freezing Point Boiling point Diffusion, Effusion Mobility Compressibility of Gas	<b>Ch # 06</b> Collide Dilution Molarity Concentration Molar solution Aqueous solution Concentrated solution
<b>Ch # 07</b> Electrochemistry Electrochemical reaction Electrochemical cell Electrolytes Non-Electrolytes Battery, Alloy Electrochemical equivalent 1 Faraday	<b>Ch # 08</b> Paramagnetic Metal Hardness Mohs Scale Noble Metals Electropositivity	

#### DIFFERENCE:

<b>Ch # 01</b> Physical and analytical chemistry Mixture and compound Atom and Ion Free Radical and Ion Molecule and Molecular ion	<b>Ch # 02</b> Shells and Sub-shells
<b>Ch # 03</b> Periods and Groups. Alkali metals and Halogens Ionization Potential & Electron Affinity	<b>Ch # 04</b> Covalent bond & Dative bond Bond pair and Lone pair Polar & Non-Polar Bond Octet rule and Duplet rule Polar Compound and Non-Polar Compound Ionic Compound and Covalent Compound

<b>Ch # 05</b> Amorphous and Crystalline solids	<b>Ch # 06</b> Saturated, Unsaturated & Super-Saturated Solution
<b>Ch # 07</b> Primary and Secondary cells Oxidation & Reduction Oxidizing Agent & Reducing Agents Strong Electrolytes & Weak Electrolytes	<b>Ch # 08</b> Alkali metals & Alkaline Earth Metals <b>Sodium and iron as soft and hard metal</b>

### REASONS:

<b>Ch # 01</b> Explain why hydrogen and oxygen are considered as element whereas water is compound?	<b>Ch # 02</b> Why do isotopes of same element have same chemical but different physical properties
<b>Ch # 03</b> Why Alkaline Earth metals show irregular melting and boiling points? Why ionization energy, electron affinity and electronegativity exhibit same trend in period and group? Why do bigger size atoms have more shielding effect? Why Fluorine ion is considered as Neon atom? Why noble gases do not react with other elements at ordinary conditions?	<b>Ch # 04</b> Why intermolecular forces are weaker than intramolecular forces. Why table salt has a very high melting point? Why ionic compounds are solid?
<b>Ch # 05</b> Why gases diffuse rapidly? Why density of gases increase on cooling? Which gasses among CO <sub>2</sub> , CH <sub>4</sub> and H <sub>2</sub> will diffuse faster and why? Water filled glass bottles after crack in freezer, why?	<b>Ch # 06</b> Why gasoline does not dissolve in water? How are solutions beneficial for the community? Why salt dissolves in water? Why solubility of salt increases with increase in temperature? Why polar solute dissolve in nonpolar solvent? Air is a mixture of gases then why nitrogen is considered solvent
<b>Ch # 07</b> Why ionic compound conduct electricity in molten or in aqueous solutions only?	<b>Ch # 08</b> Why helmets of astronauts are coated with thin film of gold? Why glass surface is coated with gold? Why gold is used in Jewelry? Why platinum is used as catalytic converter in vehicles?

## **THEORY BASED SHORT QUESTIONS:**

### **Ch # 01**

1. Define free radical and ion with example.
2. Write down Classification of molecule.
3. Write three sentences on importances of chemistry.
4. Write down one contribution of each of the following scientists in the field of chemistry

**Jabir Bin Haiyan, Al Razi, Aristotle, Democritus, Scheele, J. Priestly, J. Black, J. J. Berzelius, H. Cavendish, Rutherford, Eric Cornell**

### **Ch # 02**

1. What are the limitations of Bohr's atomic model?
2. What is wave particle duality of electron of De Broglie Hypothesis?
3. Justify that Rutherford Atomic model has defects.
4. Describe the Chadwick's Experiment for the discovery of neutrons. Also write down three properties of neutrons.
5. Write down the applications of any three isotopes.
6. Write down the characteristics of cathode rays.
7. Write down the names of sub-atomic particles, their masses in a.m.u with their unit charges.
8. What are isotopes? Describe isotopes of Hydrogen, Carbon, Chlorine, Uranium

### **Ch # 03**

1. State the following laws:
  - Dobereiner's law of triad
  - Newland's law of octaves
  - Mendeleev's periodic law
  - Modern periodic law
2. Write down the properties of Transition Element..
3. Enlist the characteristics of Halogen and Nobel gases.
4. Explain the trend of ionization energy, electron affinity and electronegativity in groups and periods.
5. Identify the highly electronegative group of periodic table. Enlist the elements of this group. Give three common characteristics of these elements.

### **Ch # 04**

1. Define dipole - dipole forces, malleable and ductile.
2. What are the uses of adhesive materials.
3. Explain the importance of glues and epoxy resins in our society

### **Ch # 05**

1. Define Allotropy Discuss the allotropes of carbon with the structures of diamond and graphite
2. Define plasma. Write down any three applications of plasma in our daily life.
3. How kinetic molecular theory differentiates states of matter?
4. Define diffusion. Discuss how shapes and size of molecules affect the rate of diffusion in liquids.
5. Define boiling point. How boiling point is affected by different factors?

### **Ch # 06**

1. What is suspension? Give four daily life examples.
2. What is Tyndall effect? How it is used in the identification of true or colloidal solution.

**Ch # 07**

How redox reaction occurs during photosynthesis?

**Ch # 08**

Explain inertness of noble metals.

**Explain electronegative character of non-metals.**

**Explain importance of Gold / Silver.**

**Discuss alloys of gold.**

**Discuss qualitative analysis of cation like  $Zn^{+2}$ .**

How magnesium used for cathodic protection.

**EXERCISE BASED SHORT QUESTIONS:****Ch # 01**

Write down the chemical, empirical and molecular formula of the following:

- \* Sulphuric acid,                      \* Carbon dioxide,
- \* Glucose,                                \* Gypsum
- \* Benzene,                                \* Sugar,
- \* Washing soda                        \* Baking soda
- \* Caustic soda                         \* Lime stone
- \* Acetic acid                             \* Hydrogen per oxide

**Identify:**

That chlorofluoro compounds are responsible for depletion of ozone layer?

That investigates the properties of ammonia gas.

That find out the quantity and quality of paracetamol in Panadol tablet.

**Ch # 02**

Draw the Isotopes of

- \* Hydrogen                      \* Carbon                      \* Uranium                      \*
- Chlorine

**Ch # 03**

No Questions added

**Ch # 04**

**Draw electron dot and cross structures for the following molecules:**

$H_2O$ ,  $CCl_4$ ,  $CO_2$ ,  $C_2H_4$ ,  $C_2H_2$ ,  $CH_4$ ,  $N_2$ ,  $Cl_2$ ,  $H_2$

**Ch # 05**

No Questions added

**Ch # 06**

No Questions added

**Ch # 07**

Identify the oxidizing agent and reducing agents from the following

- \* Al                      \* Na                      \*  $H_2S$
- \*  $H_2SO_4$                       \*  $KMnO_4$                       \* Zn

**Identify the oxidizing agent and reducing agents from the following reactions:**



Identify Strong and Weak Electrolytes from the following?

- \*  $HCl_{(aq)}$                                       \*  $KI_{(aq)}$
- \*  $NaOH_{(aq)}$                                  \*  $H_2S_{(aq)}$
- \*  $CH_3COOH_{(aq)}$                          \*  $NH_4OH_{(aq)}$

**Define alloys and write the names of following alloys:**

- \* Cu - Zn
- \* Cu - Al - Mg - Ni
- \* Cu - Zn - Sn

**Ch # 08**

No Questions added

**NUMERICAL BASED SHORT QUESTIONS:**

<b>Ch # 01</b> Book's Questions # (Page 32) 01, 02, 03, 04 and 05 Book's Solved Examples # (Pg 24 to 28) 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11 Book's Solved Examples # (Pg 17, 18) 1.1, 1.2, 1.3, 1.4 Balancing Equation from Book and Past Papers	<b>Ch # 02</b> Book's Questions # (Page 54) 02 (Sec-B), 08 (Sec-C)
<b>Ch # 03</b> No Questions added	<b>Ch # 04</b> No Questions added
<b>Ch # 05</b> Book's Questions # (Page 119) 01 to 06 Book's Solved Examples # (Pg100) 5.1 & 5.2 Book's Solved Examples # (Pg 101-02) 5.3, 5.4	<b>Ch # 06</b> Book's Questions # (Page 143) 01 to 07 Book's Solved Examples # (Pg 124-125) 6.1 & 6.2 (Pg 128-129) 6.3, 6.4 (Pg 130-133) 6.5, 6.6, 6.7
<b>Ch # 07</b> No Questions added	<b>Ch # 08</b> No Questions added

**DETAILED QUESTIONS**

<b>Ch # 01</b> 1. Define chemistry. What are Green chemistry and Environmental chemistry? Discuss how they are helpful in reducing pollution. OR What do you mean chemical species? Explain ion, molecular ion and free radical	<b>Ch # 02</b> 1. Describe the discovery of cathode rays through Discharge Tube Experiment with labeled diagram. Also write down the properties of cathode rays. 2. Describe the postulates of Bohr's Atomic Model? 3. Discuss Rutherford's gold foil experiment in the light of structure of atom. 4. Derive the De Broglie's formula for the wavelength associated with an electron using Einstein and Max Planck's energy equations. 5. Describe the Schrodinger atomic model.
<b>Ch # 03</b> 1. State Modern Periodic Law. What are periods in the Modern Periodic Table? Explain them. 2. Determine the demarcation of periodic table in to s, p, d and f blocks.	<b>Ch # 04</b> 1. Define ionic bond. Discuss the formation of sodium chloride (NaCl) OR magnesium oxide (MgO). 2. Describe the formation of a covalent bond between two nonmetallic atoms. Explain single, double and triple covalent bond with examples. 3. What is dative bond? Explain the formation of NH <sub>3</sub> and HCl.
<b>Ch # 05</b> 1. State Boyle's Law and Charles' Law. Also derive their formulae for initial and final states of a gas 2. Write down all the postulates of Kinetic Molecular Theory (KMT) for gases	<b>Ch # 06</b> 1. Define the term solubility. Briefly explain all the factors affecting solubility. OR Explain general principal of solubility. / Explain factors that affect solubility.

3. **Define evaporation. Discuss all the factors on which evaporation depends**
4. Describe the process of diffusion in liquids? State factors which influence it. / how boiling is affected by different factors

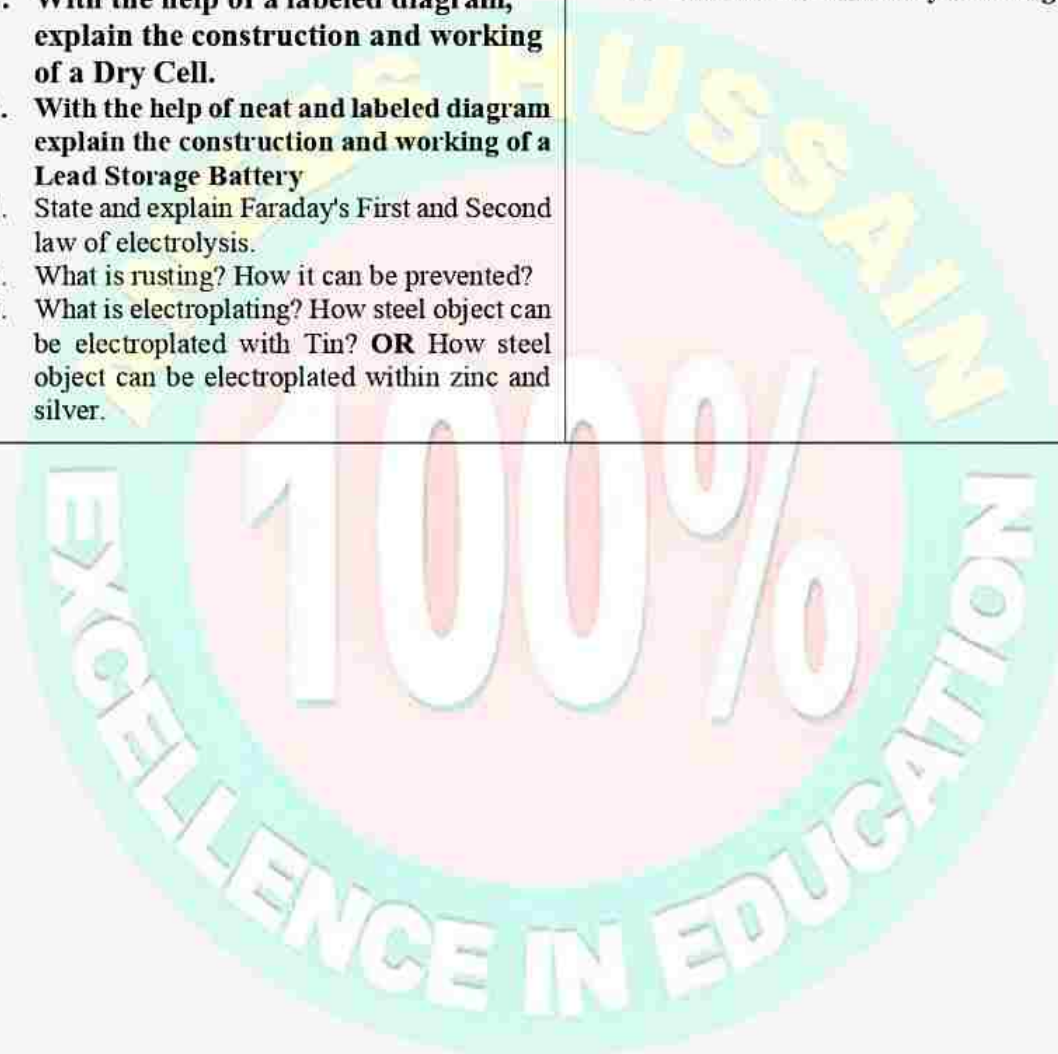
- OR** Explain solubility with reference to like dissolve like principle.
- OR** Explain the attraction of  $\text{Na}^+$  and  $\text{Cl}^-$  ions for water molecule?
2. **Compare the properties of solution, colloid and suspension.**
  3. How dilute solution is prepared from concentrated solution?

#### **Ch # 07**

1. **Explain electrolysis with labeled diagram along with necessary cell reactions.**
2. **With the help of a labeled diagram, explain the construction and working of a Dry Cell.**
3. **With the help of neat and labeled diagram explain the construction and working of a Lead Storage Battery**
4. State and explain Faraday's First and Second law of electrolysis.
5. What is rusting? How it can be prevented?
6. What is electroplating? How steel object can be electroplated with Tin? **OR** How steel object can be electroplated with zinc and silver.

#### **Ch # 08**

1. Explain experimental test for  $\text{Cl}^-$  and  $\text{I}^-$ .
2. Discuss the position and importance of Na in periodic table.
3. **Discuss the reactivity of Halogens.**





# ANEES HUSSAIN COACHING CLASSES

EXCELLENCE IN EDUCATION SINCE 1989

## COMPREHENSIVE EXAMINATION 2025-26

### CHEMISTRY PAPER-SSC PART-I (SCIENCE GROUP)

According to the syllabus of the Board of Secondary Education, Karachi



#### General Instructions:

**Section "A":** It consists of 12 multiple choice questions (MCQs) and all of them are to be answered.

**Section "B":** It consists of 12 short answer questions of which 08 questions are to be answered.

**Section "C":** It consists of 06 descriptive answer questions of which 04 questions are to be answered.

#### SECTION 'A'

#### (MULTIPLE CHOICE QUESTIONS)

**Time: 30 Minutes**

**(Marks: 12)**

#### Note

- Attempt all questions from this section
- Do not copy down questions. Write only the answers against the proper number of the question.
- Each question carries one mark.

**Q1. Choose the correct answer of each from the given option:**

- The number of moles in  $11.2\text{dm}^3$  of  $\text{CO}_2$  at STP is:
  - 1
  - 0.5
  - 22.4
  - 2
- This one of the following radio-isotopes is used in smoke detectors:
  - C-14
  - P-31
  - Am-241
  - Pu-238
- Which one of the following decreases along a period?
  - Ionization energy
  - Atomic radius
  - Electronegativity
  - Electron affinity
- Which of the following elements has the strongest metallic bond?
  - Sodium
  - Potassium
  - Magnesium
  - Aluminum
- Which of the following metals can displace rubidium from its compounds?
  - Lithium
  - Sodium
  - Potassium
  - Caesium
- Which of the following gases has the lowest rate of diffusion?
  - $\text{H}_2$
  - $\text{CO}_2$
  - $\text{N}_2$
  - $\text{O}_2$
- Tyndall Effect is exhibited by:
  - Solution
  - Colloid
  - Suspension
  - Both a & b
- 10% (w/w) sugar solution means that 10g of solute dissolved in:
  - 90g of water
  - 95g of water
  - 100g of water
  - 105g of water
- The alloy of Cu-Zn is:
  - Sterling silver
  - Brass
  - Bronze
  - Solder
- Which compound is known as lunar caustic?
  - $\text{KNO}_3$
  - $\text{AgNO}_3$
  - $\text{NaOH}$
  - $\text{NaNO}_3$
- The equivalent mass of Al is:
  - 27g
  - 3g
  - 9g
  - 5g
- Molecular formula of glucose is  $\text{C}_6\text{H}_{12}\text{O}_6$ , its empirical formula is:
  - CHO
  - $\text{CH}_2\text{O}$
  - $\text{C}_2\text{H}_2\text{O}$
  - $\text{CH}_2\text{O}_2$

NORTH NAZIMABAD CAMPUS I	NORTH NAZIMABAD CAMPUS II	GULSHAN	NORTH KARACHI	BAHADURABAD	GULISTAN-E JOHAR	MAYMAR	MALIR
C-17 Block L-5 Star Chowrang, near Imam Clinic, North Nazimabad, Karachi. 021-36631160/36634284 0321-2333114	2nd Floor Salma Pearl View, B-gg Block H, North Nazimabad, near Danial Snacks 021-36641888/36641888 0333-2867446-7	E4, 1 <sup>st</sup> Floor, Maqbool Heights, Main NPA Chowrang, Above Mobile World, Block-10, Gulshan-e-Iqbal, Karachi 021-34989588/34993720 34993996/0321-9289508	A-985, 2nd Floor, Sector 11-B, main U.P More bus stop, North Karachi, Karachi 021-36922866/0311-2299282 0322-2685558	Mezzanine floor, Alamgir Rd, near Subway Snacks & Sharfabad Chowrang, Karachi 021-34943939/34921180 0303-2207893	1 <sup>st</sup> Floor, Sarah Grand, Plot No. 58-29, Gulistan-e-Johar, Block 7, Main University Road, Near Safara Chowrang, Karachi 021-34661002/34661003 0322-4977706	C-30, 1 <sup>st</sup> Floor, Sector Z-1, Opposite Mohrin Food, Gulshan-e-Maymar, Karachi 021-36553355 0314-1222352	Plot No. 5, Block - E, Hunza Town, Model colony, Jinnah Avenue Road, Malir, Karachi. 021-34115573, 34115574 0300-2166333







# ANEES HUSSAIN COACHING CLASSES

EXCELLENCE IN EDUCATION SINCE 1989

## COMPREHENSIVE EXAMINATION 2025-26

### CHEMISTRY PAPER-SSC PART-I (SCIENCE GROUP)

According to the syllabus of the Board of Secondary Education, Karachi

#### SECTION 'C'

#### (DETAILED-ANSWER QUESTIONS)



- Q14.** State Boyle's law and Charles' law. Derive their formulae.
- Q15.** Briefly explain the construction and working of Dry Cell **OR** Lead Storage Battery with the help of a labelled diagram.
- Q16.** Define solubility. Explain the factors affecting solubility.
- Q17.** Define covalent bond. Explain its types with respect to the number of bonding pairs of electrons with examples of each. Also write two characteristics of covalent compounds.
- OR** Define ionic bonding. Explain the formation of ionic bond in NaCl. Also write two characteristics of ionic compounds.
- Q18.** Describe Rutherford's Gold Foil Experiment in the light of structure of atom. What were the conclusions drawn from this experiment?
- OR** Describe Discharge Tube Experiment for the discovery of cathode rays. Write down the characteristics of these rays.
- Q19.** What is period? How many periods are there in the modern periodic table? Describe them.
- OR** Determine the demarcation of periodic table in to s, p, d and f blocks.

NORTH NAZIMABAD CAMPUS I	NORTH NAZIMABAD CAMPUS II	GULSHAN	NORTH KARACHI	BAHADURABAD	GULISTAN-E-JOHAR	MAYMAR	MALIR
C-17 Block I, 5 Star Chowrang, near Imam Clinic, North Nazimabad, Karachi. 021-36651160/36636284 0321-2333114	2nd Floor Salma Paarl View, B-pp block H, North Nazimabad, near Daniel SnaCS 021-36641888/36641888 0333-2857446-7	E4, 1 <sup>st</sup> Floor, Maqbool Heights, Main NPA Chowrang, Above Mobilo World, Block-10, Gulshan-e-Iqbal, Karachi 021-34989588/34983720 34991996/ 0321-9289588	A-985, 2nd Floor, Sector 11-B, main U.P. Mere bus stop, North Karachi, Karachi 021-3602296/0511-2590282 0322-2685558	Mezzanine Floor, Alamghar Rd, near Subway Sweets & Sharabad Chowrang, Karachi 021-32943933/ 34921180 0303-2267893	1 <sup>st</sup> Floor, Sarah Grandis, Plot No. 38-29, Gulistan-e-Johar, Block 7, Main University Road, Near Sadera Chowrang, Karachi 021-34661002/34661003 0322-4977206	C-28, 1 <sup>st</sup> Floor, Sector Z-1, Opposite Mohsin Foods, Gulshan-e-Moyatar, Karachi 021-36358355 0314-2222352	Plot No.5, Block - 1, Huma Town, Model colony, Jinnah Avenue Road, Malir, Karachi. 021-34115575, 34115574 0330-2166335





Max. Marks: 60

کل نمبر: ۶۰

BOARD OF SECONDARY EDUCATION KARACHI

S.S.C 2<sup>nd</sup> ANNUAL EXAMINATION – 2025

CHEMISTRY (THEORY) PAPER-I

CLASS -X (SCIENCE GROUP)

SECTION "A" (COMPULSORY)

MULTIPLE CHOICE QUESTIONS (MCQs) MARKS:12

Note: (I) Attempt all the parts of this section. (II) Don't copy the part of the question, write only the answers, numbered as in the question paper.

A.E/II/10/II/201125/M

Time: 3 hours

وقت: تین گھنٹے

حصہ الف ( لازمی )

کثیر الانتخابی سوالات ( نمبر: ۱۲ )

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

ادبیے ہوئے ممکنہ جوابات میں سے ہر ایک کے لئے درست جواب کا انتخاب کیجئے :

(i) Melting point of chocolate is:

(i) چاکلیٹ کا نقطہ پگھلاؤ ہے:

- ☆ 38.83 °C. ☆ 36 °C
☆ 37 °C ☆ 35 °C

- ☆ 36 °C ☆ 38.83 °C
☆ 35 °C ☆ 37 °C

(ii) A piece of matter in pure form is termed as:

(ii) باتے کا ایک ٹکڑا خالص حالت میں کہلاتا ہے:

- ☆ Radical ☆ Mixture
☆ Compound ☆ Ion

- ☆ پریڈیکل ☆ آمیزہ
☆ مرکب ☆ آئن

(iii) It is used to estimate the age of fossils:

(iii) یہ دکان کی عمر کا تعین کرنے کے لیے استعمال ہوتا ہے:

- ☆ Colbat-60 ☆ Carbon-14
☆ Phosphorous-32 ☆ Gold-198

- ☆ کاربن-14 ☆ کربن-60
☆ گولڈ-198 ☆ فاسفورس-32

(iv) The ability to attract shared pair of electron, is called:

(iv) الیکٹران کے مشترکہ جوڑے کو کشش کرنے کی صلاحیت کہلاتی ہے:

- ☆ Electron affinity ☆ Electro negativity
☆ Ionization energy ☆ Shielding effect

- ☆ الیکٹرون نیگیٹیوٹی ☆ آئیونائزیشن کی توانائی
☆ آئیونائزیشن کی توانائی ☆ شیلڈنگ کا اثر

(v) All Transition elements are:

(v) تمام ٹرانزیشن عناصر ہیں:

- ☆ Gases ☆ Metals
☆ Non-metals ☆ Metalloids

- ☆ دھاتیں ☆ گیسیں
☆ میٹالوئڈز ☆ غیر دھاتیں

(vi) One atmospheric pressure is equal to:

(vi) ایک فضائی دباؤ برابر ہے:

- ☆ 10325 Pascal ☆ 106075 Pascal
☆ 10523 Pascal ☆ 101325 Pascal

- ☆ 106075 پاسکل ☆ 10325 پاسکل
☆ 101325 پاسکل ☆ 10523 پاسکل

(vii) The compound not soluble in water:

(vii) مرکب پانی میں حل نہیں ہوتا:

- ☆ NaCl ☆ C6H6
☆ KBr ☆ MgCl2

- ☆ NaCl ☆ C6H6
☆ KBr ☆ MgCl2

(viii) Ionic crystals have:

(viii) آئیونی کرسٹل رکھتی ہیں:

- ☆ High melting point ☆ Moderate melting point
☆ Less melting point ☆ Sharp melting point

- ☆ زیادہ نقطہ پگھلاؤ ☆ معتدل نقطہ پگھلاؤ
☆ کم نقطہ پگھلاؤ ☆ تیز نقطہ پگھلاؤ

(ix) Butter is an example of this type of solution:

(ix) مکھن اس طرح کے محلول کی مثال ہے:

- ☆ Gas-Solid ☆ Solid-liquid
☆ Liquid-solid ☆ Solid-gas

- ☆ گیس-ٹھوس ☆ ٹھوس-سائڈ
☆ ٹھوس-ٹھوس ☆ ٹھوس-گیس

(x) One Faraday is equal to:

(x) ایک فیرڈے برابر ہے:

- ☆ 96600 Coulombs ☆ 96800 Coulombs
☆ 96560 Coulombs ☆ 96500 Coulombs

- ☆ 96800 کولب ☆ 96600 کولب
☆ 96500 کولب ☆ 96560 کولب

(xi) In Daniel cell it is used as cathode:

(xi) ڈینیئل سیل میں کیتھوڈ کے طور پر استعمال ہوتا ہے:

- ☆ Cu ☆ Zn
☆ Sn ☆ Pb

- ☆ Zn ☆ Cu
☆ Pb ☆ Sn

(xii) This element is metalloid:

(xii) یہ عنصر میٹالوئڈ (Metalloid) ہے:

- ☆ B ☆ Co
☆ S ☆ Cr

- ☆ Co ☆ B
☆ Cr ☆ S

Continued.....

SECTION "B"

(SHORT-ANSWER QUESTIONS) MARKS: 24

Note: Attempt any EIGHT (8) questions from this section. Each question carries three (3) marks.

- Complete and balance the following equations:  
(i)  $\text{NaHCO}_3 \rightarrow$   
(ii)  $\text{NH}_3 + \text{O}_2 \rightarrow$   
(iii)  $\text{Ca} + \text{H}_2\text{O} \rightarrow$
- Chemistry and society "Go Hand in Hand" write down three points in the favour of this statement.
- Write three significant characteristics of molecule.
- Calculate the formula mass and molar mass of  $\text{NaNO}_3$   
(N = 14, Na = 23, O = 16)
- Write the field and one use of each isotopes of the following:  
(i) Cobalt 60 (ii) Americium 241 (iii) Uranium 235
- Write three general characteristics of Transition elements.
- Write three differences between Polar and Non-Polar compounds.

9. Complete the chart using formula  $2n^2$

Z	Electronic Configuration	No. Valance Electrons	Valancy	Group No.
12				

- Elaborate the following characteristics of gases:  
(i) Compressibility (ii) Mobility (iii) Density
- Write the formulae and one use each of the following compounds:  
(i) Slaked lime (ii) Ammonia (iii) Caustic soda
- Determine the number of electrons, protons and Neutrons in each of the following:  
(i)  ${}_{26}\text{F}^{56}$  (ii)  ${}_{8}\text{O}^{16}$  (iii)  ${}_{17}\text{Cl}^{37}$
- Give reasons:  
i) Why elements of group VIII-A are found in atomic form?  
ii) Density of gases increases on cooling.

SECTION "C"

(DESCRIPTIVE-ANSWER QUESTIONS) Marks: 24

Note: Attempt any FOUR (4) questions from this Section. Each question carries Six (6) marks.

- Describe discharge tube experiment. Which particle was discover during this experiment? Write two properties of it.
- What are Amorphous solids? Write four differences between Amorphous and Crystalline solids.
- What is the fourth state of matter? Who discovered it? Give three examples from daily life.
- What is Dilution of a solution? Why is it important? How do we prepare 100 ml of 0.40 M solution of  $\text{MgSO}_4$  from a stock solution of 2.0 M.
- What is electroplating? Describe the process of Nickel plating on Iron and also draw its labelled diagram.
- State and explain the Charli's law. A sample of Hydrogen gas has a volume of  $350\text{cm}^3$  at  $40^\circ\text{C}$ . If gas is allowed to expand up to  $700\text{cm}^3$  at constant pressure. Find out its final temperature.

حصہ "ب" (مختصر جواب کے سوالات) نمبر: ۲۴

نوٹ: اس حصے سے آٹھ (8) سوالات کے جوابات مطلوب ہیں۔ ہر سوال کے چھن (3) نمبر ہیں۔

- مندرجہ ذیل کیہائی مساواتوں کو مکمل اور متوازن کیجیے:  
(i)  $\text{NaHCO}_3 \rightarrow$   
(ii)  $\text{NH}_3 + \text{O}_2 \rightarrow$   
(iii)  $\text{Ca} + \text{H}_2\text{O} \rightarrow$
- کیا اور معاشرے کا "چولہا دان" کا ساتھ ہے "اس اصطلاح کی حلیت میں تین دلائل تحریر کیجیے۔
- مائیگیول کی تین اہم خصوصیات تحریر کیجیے۔
- $\text{NaNO}_3$  کا دارمولاس اور مولاس معلوم کیجیے۔  
(N = 14, Na = 23, O = 16)
- درج ذیل ہم جاد کے شعبہ کار اور ایک ایک استعمال تحریر کیجیے:  
60 گہات (i) امریکیم (ii) 241 (iii) یورینیم 235
- موزی عناصر کی تین عمومی خصوصیات تحریر کیجیے۔
- قطبی اور غیر قطبی مرکبات کے مابین تین فرق تحریر کیجیے۔

9.  $2n^2$  کا قمولاس استعمال کرتے ہوئے درج ذیل چارٹ کو مکمل کیجیے:

Z	الیکٹرون ترتیب	ویلس الیکٹرون کی تعداد	ویلسی	گروپ نمبر
12				

- گیسوں کی مندرجہ ذیل خصوصیات کی وضاحت کیجیے:  
(i) دلب پذیری (ii) حرکت (iii) کشافت
- مندرجہ ذیل کے قارمولے اور ہر ایک کا ایک استعمال تحریر کیجیے:  
(i) ان بچھانا (ii) امونیا (iii) کالک سولہ
- درج ذیل میں سے ہر ایک میں الیکٹرون، پروٹان اور نیوٹران کی تعداد معلوم کیجیے:  
(i)  ${}_{26}\text{F}^{56}$  (ii)  ${}_{8}\text{O}^{16}$  (iii)  ${}_{17}\text{Cl}^{37}$
- وجہات تحریر کیجیے:  
(i) گروپ VIII-A کے عناصر میں حالت میں کیوں پائے جاتے ہیں؟  
(ii) گھٹنک سے گیسوں کی کشافت بڑھتی ہے۔

حصہ "ج"

(بیانیہ جواب کے سوالات) نمبر: ۲۴

نوٹ: اس حصے سے کوئی چار (4) سوالات کے جوابات مطلوب ہیں۔ ہر سوال کے چھ (6) نمبر ہیں۔

- ڈسچارج ٹیوب کا تجربہ بیان کیجیے اس تجربے کے دوران کس ذرے کی دریافت ہوئی؟ اس کی دو خصوصیات تحریر کیجیے۔
- بے شکل گیسوں کیہیں؟ اگر شکل دار بے شکل گیسوں کے مابین چار فرق تحریر کیجیے۔
- مادے کی چوتھی حالت کون سی ہے؟ اسے کس نے دریافت کیا اور ذمہ داری سے اس کی تین مثالیں تحریر کیجیے۔
- حلول کا کیا کرنا کیا ہے؟ یہ کیوں اہم ہے؟  $\text{MgSO}_4$  کے 0.40 M کا 100 ml محلول کس طرح بنے گا جب کہ  $\text{MgSO}_4$  کا محلول 2.0 M ہے۔
- برقی طبع کاری سے کیا مراد ہے؟ کتل کی نوپے پر برقی طبع کاری کے طریقہ کار کو بیان کیجیے اور اس کی لٹان زدہ شکل بھی بنائیے۔
- چارلس کا قانون اور اس کی وضاحت کیجیے۔ ایک ڈیڑھ جن گیس کا حجم  $40^\circ\text{C}$  پر  $350\text{cm}^3$  ہے۔ اس گیس کا حجم  $700\text{cm}^3$  تک بڑھایا جائے بشرطیکہ دباؤ مستقل ہو تو آخری درجہ حرارت کیا ہوگا؟