

Class: 11<sup>th</sup>

Chemistry

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All Punjab Boards

## Most Important Guess Paper



"یہ گیس پیپر اتنا اہم ہے کہ آپ کی محنت اور یہ سوالات آپ کو کامیابی کی بلندیوں تک پہنچائیں گے، انشاء اللہ! ان کو اچھی طرح تیار کر لیں۔"

## Most Important Questions

## Chapter No # 1

- What is the role of magnetic separator and magnetic fields in mass spectrometer?
- Define yield. Give its types. Explain why actual yield is lesser than theoretical yield?
- Write two assumptions of stoichiometry and also define it.
- What you know about gram atom, gram ion and gram molecule?
- Mg atom is twice heavier than that of carbon atom. Comment?
- N<sub>2</sub> and CO have the same number of electrons protons and neutrons. Explain with reason.
- Define (a) Molar volume (b) Molecular Formula) Empirical formula
- Calculate gram atom in 0.1g of sodium. 100 g of silicon and 9g of ice.
- Define a) Molecular ion b) Atomicity c) Mass spectrum d) Avogadro's No.
- 180g of glucose and 342g of sucrose have the same number of molecules but different number of atoms present in them.
- No individual neon atom in the sample of element has a mass of 20.18amu. Explain.
- How can the efficiency of a chemical reaction be expressed?
- Define isotopes give an example. / Why isotope have same chemical properties but different physical properties?
- 23g of Na and 238g of U have equal number of atoms in them. Justify
- What is the function of 50 percent KOH and Mg? (ClO<sub>4</sub>)<sub>2</sub> in combustion analysis?
- Write down four steps to determine empirical formula of a compound.
- Law of conservation of mass has to be obeyed during stichometry calculations.
- What is the principle of mass spectrometry?
- Define limiting reactant, give an example and steps involved to identify a limiting reactant.

## Chapter No # 2

- Why sintered glass crucible is preferred to Gooch crucible and also differentiate it both?
- Concentrated HCl and KMnO<sub>4</sub> solutions cannot be filtered by Gooch crucible?
- How rate of filtration can be increased?
- Define R<sub>f</sub> value and why it has no unit?
- Iodine is more soluble in water in presence of KI. Discuss.
- Differentiate between absorption and partition chromatography.
- Define chromatography and give formula of distribution coefficient?
- State solvent extraction and ether extraction and give its importance.
- State distribution law sublimation with example.



- Write two methods for drying of crystals.
- Why is there a need to crystallize a crude product?
- Give the main characteristics of the solvent used for crystallization and name the solvents used for crystallization.
- How undesirable colours are removed from crystals?
- Define crystallization and steps used in crystallization.
- Differentiate between stationary phase and mobile phase.
- How mixture of  $\text{NH}_4\text{Cl}$  and  $\text{NaCl}$  can be separated?
- Give two uses of chromatography and give two application of paper chromatography.

### Chapter No # 3

- **List four postulates of kinetic theory of gases (S.Q + L.Q) VVV IMP**
- State Dalton's law of partial pressure. Write its two applications?
- Calculate the value of gas constant R in S.I units. / Give units of vander wall constant a and b.
- Explain procedure of sea divers' breath.
- Why lighter gas diffuses more rapidly than heavier gas and also differentiate between diffusion and effusion of gases.
- Define critical temperature and pressure.
- Pilots feel uncomfortable breathing at high altitude. Justify.
- Write name of fourth state of matter. How can it be obtained? And where it is found?
- State Graham's law of diffusion and write its mathematical form.
- Define Boyle's law and Charles law with its mathematical expression. / Write quantitative definition of Charles law.
- State what is neutral and artificial plasma?
- Why gases show non ideal behaviour at low temp and high pressure?
- Describe two causes of deviation from ideality.
- Water vapors do not behave ideally at 273 K?
- What is absolute scale and Avogadro's law.
- Prove that  $d = \frac{PM}{RT}$ . Calculate the density of an ideal gas.
- Define plasma state. Give its one application.
- $\text{SO}_2$  is comparatively non ideal at 273 K but behaves ideally at 327 degree Celsius.
- What is joule Thomson effect? Write principle for the liquification of the gases.

### Chapter No # 4

- Water is liquid at room temperature while  $\text{H}_2\text{S}$  is a gas. Comment.
- Differentiate between amorphous and crystalline solids.
- What you mean by lattice and lattice energy?
- How Electrical conductivity of metal decrease by increasing temperature?
- Ionic solids are insulators in solid state but become conductors when dissolved in water. Explain.
- Earthenware vessels keep the water cool. Why?
- Why HF is weaker than HCl?
- Boiling point is different at murre hills and mount Everest why?
- How crystal liquids act as temperature sensor?
- Define dipole-dipole forces and London dispersion forces with example?
- Define liquid Cystal and Important uses of liquid crystal.
- **Define isomorphism and polymorphism with two examples. (S.Q + L.Q)**
- Cleavage of crystals is itself anisotropic behavior. Why?



- Ionic crystals are highly brittle why?
- Why water and ethanol mix easily in all proportions?
- Sodium is good conductor but NaCl is not why?
- Differentiate between isotropy and anisotropy.
- Why heat of sublimation is greater than heat of vaporization? / Heat of sublimation of iodine is very high?
- Ionic solids do not conduct electricity in solid State. Give reason.
- Evaporation cause cooling why? And why evaporation takes place at all temperature?
- **Exercise liquid Q (14) and solid Q (12).**



## Chapter No # 5

- What is orbital? Draw the shape of P orbital.
- Define Heisenberg, s principle with its methodical form.
- Calculate the mass of an electron  $e/m = 1.7588 \times 10^{11}$  Colombes Kg<sup>-1</sup>.
- Differentiate between frequency and wave number.
- Give two properties of neutrons and state Mosely Law with its methodical form.
- **Write four properties of positive rays and cathode rays. (S.Q + L.Q)**
- **Give two defects in Bohr's / Rutherford's atomic model. (S.Q + L.Q)**
- Whatever gas is used in the discharge tube the nature of the cathode rays remains the same why?
- Cathode rays can cause a chemical change. Justify.
- State Pauli's exclusion principle, N + L Rule and Hounds rule.
- Why it is necessary to decreases the pressure in discharge tube to get cathode rays?
- $e/m$  value of cathode rays is just equal to that of electrons. Justify?
- The positive rays are also called canal rays. Explain.
- Describe stark and Zeeman effect.
- Compare orbit and orbital.
- **Differentiate between atomic emission and atomic absorption spectrum. (S.Q+L.Q)**
- How neutrons are discovered? Give the equation of nuclear fission reaction.
- Why the potential energy of bonded electron has negative value?
- **Differentiate between continuous and discontinuous spectrum. (S.Q + L.Q)**

## Chapter No # 6

- Why cationic radius is smaller than parent atom? / Why atomic radius is greater than cationic radius? / Why anionic radius is greater than atomic radius?
- Sigma Bond is stronger than Pi Bond. Why? / Pi bond is more diffused than sigma bond.
- Write two points of valence Bond Theory and VESPER Theory.
- MOT is superior to VBT, explain.
- How coordinate covalent bond is different from covalent?
- Define orbital hybridization of orbitals and bond order.
- I. E decreases down the group but atomic number increases. Explain.
- Bond distance is compromising distance between two atoms. Explain with reason.
- Define polar and non-polar covalent bond with two examples.
- Define octet rule. Give two examples of compounds which do not obey this rule.
- Why no bond can have 100% ionic character?
- Why the atomic radii of the atoms cannot be determined precisely?
- **Why CO is polar and CO<sub>2</sub> is non-polar?**
- **Define electronegativity and electron affinity. Give its trend in periodic table. (S.Q + L.Q)**





- What is paramagnetic character? Give the reason for paramagnetic character of oxygen.
- Why the atomic radii increase down the group?
- **Why CS<sub>2</sub> molecule is linear while SO<sub>2</sub> is angular?**
- Define ionic and covalent radii.

## Chapter No # 7

- Draw labelled diagram of bomb calorimeter.
- Differentiate between exothermic reaction and endothermic reaction?
- **Difference between spontaneous and non-spontaneous reaction with examples. (S.Q + L.Q)**
- Describe system and surrounding?
- What are thermochemical reactions? Give their types.
- Differentiate between internal energy and enthalpy?
- State first law of thermodynamics with its mathematical form?
- Burning of candle is a spontaneous process. Justify?
- Define standard enthalpy of atomization and enthalpy of combustion. Give an example?
- State the Hess's law of constant heat summation and state function?
- Define enthalpy of formation and enthalpy of solution? Give example.
- Enthalpy is a state function Justify?
- Is it true the non-spontaneous process never happens in universe? Explain it.
- Why the enthalpy of neutralization has the same value for any strong acid with any strong base?
- Define Born-Haber cycle and lattice energy?
- Prove?  $\Delta E = qv$ ?
- What is meant by heat (q) and work (w) in thermos chemistry?

## Chapter No # 8

- What are the optimum conditions for the synthesis of NH<sub>3</sub>?
- Give preparation of acidic and basic buffer solutions?
- Write two applications of equilibrium constant?
- Write down Henderson equation for acidic and basic buffers?
- Define pH and pOH give its equation?
- Solubility of glucose increase in water by heating. Give reason?
- Difference between reversible and irreversible reaction.
- How K<sub>c</sub> predicts the extent of chemical reaction?
- What is the effect of catalyst of equilibrium constant?
- What is the ionic product of water?
- Why we need buffer solution and How does buffer act? Explain.
- Explain the term buffer and buffer capacity?
- What is common ion effect? Give example and What is the effect of common ion on solubility?
- State Le-Charlier's principle and law of mass action?
- Write two uses of buffer solution?
- Define ***pK<sub>a</sub>* and *pK<sub>b</sub>***

## Chapter No # 9

- The sum of all the mole fractions is equal to unity. Discuss.
- Give two definitions of Roulet's law.
- Beckman thermometer is used to note the depression in freezing point. Give reason.



- **Define solubility. And also define two types of solubility curve. (S.Q + L.Q)**
- Define colligative properties. Write important colligative properties.
- Boiling point of liquid are increased when solute is added to them Give reason.
- Define molarity, molality and ppm.
- Difference between zeotropic and azeotropic mixture.
- Define ebullioscopy content with example.
- Define fractional crystallization. how it is useful?
- **Difference between ideal and non-ideal solution. (S.Q + L.Q)**
- One molal solution of glucose in water is dilute as compared to one molar solution of glucose. Justify.
- One molal solution of urea is more dilute as compared to one molar solution of glucose. Justify.
- What are hydrates and hydrolysis? How they are formed?
- What is mole reaction of solution?
- Aqueous solution of  $\text{CuSO}_4$  is acidic in nature? Justify.
- Why non-ideal solution does not obey Routs law?



## Chapter No # 10

- Na and K can displace hydrogen from acids but Pt, Pd and Cu cannot. Comment on it?
- A porous plate or a salt bridge is not required in lead storage cell. Give reason?
- Define salt bridge and explain the function of salt bridge?
- Define standard electrode potential, electrode potential and electrochemistry?
- SHE acts as anode when connected with Cu electrode but cathode when connected with Zn electrode. Justify.
- A salt bridge maintains the electrical neutrality in the galvanic cell. Explain?
- Differentiate between electrolysis and electrolytic conduction?
- Determine oxidation number of Mn in  $\text{KMnO}_4$  and  $\text{K}_2\text{MnO}_4$ ?
- Calculate the oxidation number of chromium is: (a)  $\text{Cr}_2(\text{SO}_4)_3$  (b)  $\text{K}_2(\text{SO}_4)_3$  (c)  $\text{Cr}_2\text{O}_7^{2-}$
- Define the electrochemical series? Give two examples of electrochemical series?
- Impure copper can be purified by electrolytic process. Explain it?
- Differentiate between a cell and battery?
- Why standard oxidation pot 4 entail of Zn is 0.76 V and its reduction potential is 0.76V?
- Calculate oxidation number of Mn in  $\text{KMnO}_4$  and  $\text{Na}_2\text{MnO}_4$ ?
- Different between electrolytic and voltaic cell?
- Difference between primary and secondary cell.
- Give reaction when lead storage battery is discharged and recharged?

## Chapter No # 11

- Define order of reaction, negative catalyst and auto catalyst.
- **Catalysis and difference between homogenous and heterogeneous catalysis with one example each. (S.Q + L.Q)**
- Define catalytic poisoning with example.
- Rate of chemical reaction is ever changing parameter? give reason.
- How does surface area and light affect the rate of reaction?
- The radioactive decay is always first order reaction. Explain.
- Differentiate between rate and rate constant of reaction.
- **Four characteristics of catalyst and enzyme catalysis (S.Q + L.Q)**
- Compare order of reaction and molecularity.
- Define instantaneous and average rate of reaction.





- Define half-life period. How is it used to determine the order of reaction?
- What is specific rate constant or velocity constant?
- Enzymes are specific in action. Justify.
- The unit of rate constant of second order reaction in  $\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$  but the unit of rate of reaction is  $\text{mol}^{-1} \text{s}^{-1}$ . Give reason.
- Differentiate between fast step and rate determining step with example.
- What is pseudo first order reaction and zero order reaction? Give an example.
- What is rate determining step? Give example.
- **Exercise Q 4, 6, 7, 8, 17**

## Most Important Long Questions

### Chapter No # 3

- **State Dalton Law of partial pressure and also discuss its applications.**
- **How are Boyle's law and Charles law are derived from kinetic molecular theory of gases and also give its experimental verification.**
- **Describe Linds method for the liquefaction of gases.**
- State Graham's law of diffusion of gases and give its experimental verification.
- Graphical explanation of absolute zero.
- **Characteristics and application of plasma.**

### Chapter No # 4

- **What is hydrogen bonding and explain its all applications.**
- **Define Ionic and crystalline solids? Write any four properties of each.**
- What is London dispersion forces and explain its factors.
- **Define liquid crystals. Discuss important uses of liquid crystal.**
- **Define vapor pressure. How vapour pressure of a liquid is determined by manometric method?**
- **What are Covalent & molecular solids? Give examples and explain their properties.**
- What is the boiling point and explain the effect of external pressure on boiling point with two examples.
- Structure of metals.

### Chapter No # 5

- **Give defects and postulate of Bohr's atomic model.**
- Explain Heisenberg Uncertainty principle.
- **Describe Millikan's oil drop method for determination of charge of electron.**
- **Derive the equation for radius of nth orbit of hydrogen atom using Bohr's model.**
- What is J.J Thomson's experiment for determining e/m value of electron?
- **All quantum numbers (Most important Principal and Azimuthal)**
- Planck's Quantum theory

### Chapter No # 6

- **Explain  $sp$ ,  $sp^2$  and  $sp^3$  hybridization with the help of two examples.**
- **How will you describe paramagnetic character of  $O_2$  &  $N_2$  molecules on basis of MOT?**
- Discuss the energetics of bond formation by giving an example of  $H_2$  molecule.



- Give the postulates of VSEPR theory. Explain the structure of ammonia on the basis of this theory.
- Define dipole moment. Give its units. How is it used to determine the geometry of molecules?
- **NOTE:** Try to prepare VESPER Theory and Hybridization Complete (TOP MOST IMP)



### Chapter No # 7

- State the explain with an example, the Hess's law of constant heat summation?
- Explain Born Hyber cycle to Calculate energy of sodium chloride.
- How  $\Delta H$  can be determined by using bomb calorimeter?
- Prove that (i)  $\Delta H = q_p$  (ii).  $\Delta E = q_v$ ? / Explain 1<sup>st</sup> law of thermodynamics.
- What is Enthalpy of a reaction? How is  $\Delta H$  of a reaction measured in laboratory by glass calorimeter?

### Chapter No # 9

- State and explain Roults law in three forms.
- Define solubility and explain its two types.
- How can you measure the elevation of boiling point by Landsberger method?
- How lowering the vapour pressure as colligative property is used to find out molecular mass of solute?
- Discuss freezing point of depression by Backman's apparatus.

### Chapter No # 10

- Define SHE and how electrode potential of is Zn and Cu measured?
- Describe the electrolysis of molten sodium chloride and a concentrated solution of sodium chloride.
- What is electrochemical series and Electrolysis? Give their applications.
- Explain the construction and working of fuel cells and voltaic cell and give their advantage.
- Explain charging and discharging of lead accumulator.

### Chapter No # 11

- How does Arrhenius equation help us to calculate the energy of activation of a reaction?
- Define half-life period and order of reaction. Describe half-life method to determine the order of reaction.
- Explain the Factors affecting the rate of chemical reaction.
- Write any four physical methods and chemical method to determine the rate of reaction.
- **"Bold questions are very important, so make sure to focus on them!"**





## Long Questions Numerical

**Note:** For numerical questions, pay special attention to all the numerical questions from Chapter 1 and Chapter 8, and most of the questions that will come from Chapter 1 will have examples.

### Chapter No # 1

- Pay special attention to all the examples in Chapter No # 1 but these few are more important, practice them more.
- Examples No: 3, 4, 5, 6, 10, 11, 12, 13, 14

### Chapter No # 8

- Pay special attention to all the examples in Chapter No # 8 but these few are more important, practice them more.
- Examples No: 2, 4, 5, 6, 7 and Questions No. 23, 24, 25 From Exercise

## Long Questions Pairing



Questions No # 5 of Chapter No.1 (a) N + Chapter No.3 (b)

Questions No # 6 of Chapter No.4 (a) + Chapter No.6 (b)

Questions No # 7 of Chapter No.5 (a) + Chapter No.7 (b)

Questions No # 8 of Chapter No.8 (a) N + Chapter No.11 (b)

Questions No # 9 of Chapter No.9 (a) + Chapter No.10 (b)

**NOTE:** 13, 14 objectives from exercise and 3 to 4 conceptual / application based may be asked from Chapters.

- **"Bold questions are very important, so make sure to focus on them!"**

نوٹ: "MCQs کے لیے، آپ [Pakcity.org](http://Pakcity.org) کی ویب سائٹ سے گیس پیپر کی مکمل فری PDF فائل ڈاؤن لوڈ کر سکتے ہیں، جس میں پچھلے تمام سالوں کے تمام بورڈ کے پیپر چیپٹر وائز حل کیے گئے ہیں۔"

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