Chemistry	(C)	L.K.No. 1531	Paper Code No. 6485
Paper I	(Objective Type)	Inter (Ist – A – Exam 2024)	
Time :	20 Minutes	Inter (Part - I)	Group Ist
Marks :	17	Session (2022 – 24) & (2023 – 25)	

Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	Solvent Extraction is an Equilibrium Process and is controlled by : (A) Law of Mass Action (B) The amount of Solvent used (C) Distribution Law (D) The amount of Solute
(2)	The Volume occupied by 1 . 4 g of N_2 at S.T.P is : (A) 2 . 24 dm^3 (B) 22 . 4 dm^3 (C) 1 . 12 dm^3 (D) 112 cm^3
(3)	The mass of 1 Mole of Electron is : (A) 1 . 008 mg (B) 0 . 55 mg (C) 0 . 184 mg (D) 1 . 673 mg
(4)	The Comparative rate at which the solute moves in Paper Chromatography depends on : (A) The size of Paper (B) R_f values of solutes (C) Temperature of the experiment (D) Size of the Chromatographic tank used
(5)	In order to mention Boiling Point of Water at 110°C , the External Pressure should be : (A) Between 760 torr and 1200 torr (B) Between 200 torr and 760 torr (C) 765 torr (D) Any value of Pressure
(6)	A real gas obeying Van der Waals equation will resemble ideal gas if : (A) Both ' a ' and ' b ' are large (B) Both ' a ' and ' b ' are small (C) ' a ' is small and ' b ' is large (D) ' a ' is large and ' b ' is small
(7)	Pressure remaining constant , at which temperature , the volume of a gas will become twice of what it is at 0°C : (A) 546° C (B) 200° C (C) 546 K (D) 273 K
(8)	Ionic Solids are characterized by : (A) Low Boiling Point (B) Good Conductivity in Solid State (C) High Vapour Pressure (D) Solubility in Polar Solvents
(9)	The nature of Positive rays depend upon : (A) The Nature of the Electrode (B) The Nature of the Discharge Tube (C) The Nature of the residual Gas (D) All of the above
(10)	Which of the Hydrogen Halides has highest Percentage of Ionic Character : (A) HCl (B) HBr (C) HF (D) HI
(11)	The number of Bonds in Nitrogen Molecule : (A) One Sigma and One Pi (B) One Sigma and two Pi (C) Three Sigma only (D) Two Sigma and One Pi
(12)	Quantum number values for 2p Orbitals are : (A) $n = 2, \ell = 1$ (B) $n = 1, \ell = 2$ (C) $n = 1, \ell = 0$ (D) $n = 2, \ell = 0$
(13)	18 g glucose is dissolved in 90 g of H_2O . The relative lowering of Vapour Pressure is equal to : (A) $\frac{1}{5}$ (B) 5 . 1 (C) $\frac{1}{51}$ (D) 6
(14)	The pH of 10^{-3} mol dm^{-3} of an Aqueous Solution of H_2SO_4 is : (A) 3 (B) 2 . 7 (C) 2 . 0 (D) 1 . 5
(15)	If an endothermic reaction is allowed to take place very rapidly in the air , the temperature of the surrounding air : (A) Remains Constant (B) Increases (C) Remains Unchanged (D) Decreases
(16)	The Cathodic Reaction in the Electrolysis of dil . H_2SO_4 with Pt Electrode is : (A) Reduction (B) Oxidation (C) Both Oxidation and Reduction (D) Neither Oxidation nor Reduction
(17)	In Zero Order Reaction , the rate is independent of : (A) Temperature of Reaction (B) Concentration of Reactants (C) Concentration of Products (D) None of these

Roll No.	1531 - 1)22	Inter (Part - I)	
Chemistry (Subjective)	**Inter (Ist – A – Exam – 2024)**	**Group Ist**	Time 2 : 40 Hours Marks : 68

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary. | **Part - I** | | 22 x 2 = 44

Q.No.2	(i)	Why some Elements have Atomic Masses in fraction?		
	(ii)	Define Pressure . Give Units of Pressure.		
	(iii)	Define Atomicity and Isotopy.	(iv)	Differentiate between Diffusion and Effusion.
	(v)	Why Sintered Glass Crucible is better than Gooch Crucible?	(vi)	Define Crystallization. Write down only two names of its steps.
	(vii)	What are two causes of deviation from Ideality of Gases?	(viii)	Write down major steps involved in Complete Quantitative Analysis.
	(ix)	How Partial Pressure of Dry Gas can be calculated by Dalton's Law of Partial Pressure?	(x)	How the value of K_C Predict the Extent of Reaction ? Give examples.
	(xi)	How would you maximize the yield of Ammonia in Haber 's Process ?	(xii)	Justify the effect of Catalyst on Equilibrium Constant.
Q.No.3	(i)	Why Boiling Point of Water is different at Murree Hills and Mount Everest?	(ii)	One feels sense of Cooling under the fan after bath. Why?
	(iii)	Define Allotropy. Give example	(iv)	Cleavage itself is an Isotropic behaviour why?
	(v)	State Pauli 's Exclusion Principle.	(vi)	Define ppm. Write Formula.
	(vii)	Why Boiling point of Solvent increases by adding Solute?	(viii)	Define Order of Reaction. Give example.
	(ix)	Write Electronic Configuration of Chromium (At. No . 24) .	(x)	What happens when the Neutron Decay?
	(xi)	The e/m of positive rays is less than Cathode Rays . Justify.	(xii)	A Catalyst is Specific in its action. Justify with example
Q.No.4	(i)	What is trend of Variation for Electron Affinity in the Periodic Table?		
	(ii)	Predict the Geometry of Molecule H_2O by VSEPR Theory.		
	(iii)	Why Sigma Bond is stronger than Pi Bond ?		
	(iv)	Define Dipole Moment and write its Unit.		
	(v)	Justify that $\triangle E = q_v$.		
	(vi)	Explain the term Enthalpy . Also write its formula.		
	(vii)	Define Enthalpy of Atomization with an example.		
	(viii)	Calculate Oxidation No. of Cr in $K_2Cr_2O_7$		
	(ix)	Lead Accumulator is a Chargeable Battery. Comment on it.		

(Part – II) | 3 x 8 = 24

Q.No.5	(a)	What are Isotopes ? Discuss Relative Abundance of Isotopes.	(4)
	(b)	Describe the given properties of Crystalline Solids : (i) Anisotropy (ii) Polymorphism	(4)
Q.No.6	(a)	There is a mixture of Hydrogen , Helium and Methane occupying a Vessel of Volume 13 dm^3 at 37 ^oC and Pressure of 1 atm . The Masses of H_2 and He are 0 . 8 g and 0 . 12 g respectively . Calculate the Partial Pressures in torr of each gas in the mixture .	(4)
	(b)	State and explain Heisenberg 's Uncertainty Principle .	(4)
Q.No.7	(a)	Explain effect of Bonding on following properties of Compounds : (i) Isomerism (ii) Reaction Kinetics	(4)
	(b)	$N_{2(g)}$ and $H_{2(g)}$ combine to give $NH_{3(g)}$. The value of K_c in this reaction at 500^oC is 6 . 02 x 10^{-2} . Calculate the value of K_p for this Reaction.	(4)
Q.No.8	(a)	Define Internal Energy and Enthalpy. Prove $\triangle H = q_p$	(4)
	(b)	Define Electrochemical Series. Explain the following applications in detail : (i) Prediction of the Feasibility of a Chemical Reaction (ii) Calculation of emf of the Cell	(4)
Q.No.9	(a)	What are Continuous and Discontinuous Solubility Curves ? Give examples.	(4)
	(b)	What are Enzymes ? Give three Characteristics of Enzyme Catalysis.	(4)

Paper I	(Objective Type)	Inter (Ist – A – Exam 2024)	
Time :	20 Minutes	Inter (Part - I)	(Group 2nd)
Marks :	17	Session (2022 – 24) & (2023 – 25)	

Note : Four choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. on the Objective Bubble Sheet. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1	Number of Crucibles are :
(1)	(A) 2 (B) 3 (C) 4 (D) 5
(2)	Which of the following is Water absorber which is used in Combustion Analysis : (A) $MgCl_2$ (B) $Mg(ClO_4)_2$ (C) $MgBr_2$ (D) Mg_3N_2
(3)	One Mole of SO_2 contains : (A) 6.02×10^{23} Atoms of Oxygen (B) 18.1×10^{23} Molecules of SO_2 (C) 6.02×10^{23} Atoms of Sulphur (D) 4 Gram Atoms of SO_2
(4)	Common ways of Carrying out Paper Chromatography are : (A) 2 (B) 4 (C) 3 (D) 5
(5)	Atmospheric Pressure at Mount Everest is : (A) 123 torr (B) 223 torr (C) 323 torr (D) 423 torr
(6)	If Absolute temperature of a gas is doubled and pressure is reduced to one half , the volume of gas will be : (A) Remain Unchanged (B) Reduce to 1 / 4 (C) Increase Four Times (D) Be Doubled
(7)	Value of Absolute Zero is : (A) – 373 . 16°C (B) – 273 . 16°C (C) 273 . 16°C (D) 373 . 16°C
(8)	Which of the given is a Pseudo Solid : (A) CaF_2 (B) Glass (C) NaBr (D) NH_4Br
(9)	Which of the given Molecule has Linear Geometry : (A) $BeCl_2$ (B) H_2O (C) H_2S (D) $SnCl_2$
(10)	Quantum Number Values for 2p Orbitals are : (A) $n = 2 , \ell = 1$ (B) $n = 1 , \ell = 1$ (C) $n = 2 , \ell = 0$ (D) $n = 1 , \ell = 3$
(11)	When Cathode rays strike on Alumina then colour of glow is : (A) Green (B) Red (C) Blue (D) Orange
(12)	Bond Order of N_2 Molecule is : (A) 0 (B) 1 (C) 2 (D) 3
(13)	The pH of 10^{-3} mol dm^{-3} of aqueous solution of H_2SO_4 is : (A) 2 . 7 (B) 3 . 0 (C) 1 . 5 (D) 2 . 0
(14)	For Decomposition of Ozone , K_C at 25°C is : (A) 10^{55} (B) 10^{50} (C) 10^{53} (D) 10^{57}
(15)	For the Reaction : $NaOH + HCl \longrightarrow NaCl + H_2O$ the change in Enthalpy is called : (A) Heat of Reaction (B) Heat of Formation (C) Heat of Neutralization (D) Heat of Combustion
(16)	Electrolyte of Lead Accumulator is : (A) 30 % H_2SO_4 (B) 20 % HCl (C) 30 % HNO_3 (D) 5 % HI
(17)	Disintegration of radioactive $^{235}_{92}U$ has Half Life of : (A) 700 Million Years (B) 710 Million Years (C) 700 Billion Years (D) 710 Billion Years

Roll No. (Group 2nd)	1532- 15000	Inter (Part – I)	Session (2022 – 24) & (2023 – 25)
Chemistry (Subjective)	Inter (Ist – A – Exam – 2024)		Time 2 : 40 Hours Marks : 68

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary. | Part - I | 22 x 2 = 44

Q.No.2	(i)	Calculate the Mass in grams of 2 . 74 Moles of $KMnO_4$.		
	(ii)	What are Molecular Ions ? How these can be generated ?		
	(iii)	When two moles (4 g) of Hydrogen are made to react with two moles (64 g) of Oxygen, which will be the Limiting Reactant ? Explain	(iv)	What is Fluted Filter Paper? Give its advantage over Ordinary Filter Paper Filtration.
	(v)	Differentiate between Adsorption and Partition Chromatography.	(vi)	Define Sublimation. Name any two substances that can be sublimed.
	(vii)	Define Pressure . Give Units of Pressure.	(viii)	Give any two applications of Plasma.
	(ix)	Helium Gas is Ideal at room temperature while $Cl_{2(g)}$ is Non-ideal . Explain it.	(x)	Calculate the pH of 1 . 0 mol dm^{-3} of H2X , which is only 50% dissociated.
	(xi)	Write down K_c Units for the following reaction : $4NH_3(g) + 5O_2(g) \rightleftharpoons 4NO(g) + 6H_2O(g)$	(xii)	Dissociation Constant for water is temperature dependent . Explain it.
Q.No.3	(i)	Define Allotropy. Give example	(ii)	The e/m value of positive rays is different for different gases used in gas discharge tube but those of electrons remain same . Why?
	(iii)	Why it is necessary to decrease the pressure in discharge tube to get Cathode rays?	(iv)	Diamond is hard and an Electrical Insulator. Justify.
	(v)	Transition temperature is shown by Elements having Allotropic forms and by Compounds showing Polymorphism. Why?	(vi)	Boiling Point of Branched Chain Alkanes are lower than corresponding Straight Chain Alkanes, why?
	(vii)	Why Ice floats on Water?	(viii)	How can de-Broglie equation be derived?
	(ix)	Why Concentration in terms of Molality is independent of temperature but Molarity depends?	(x)	Why do Boiling Points of Solvents increase due to presence of solute?
	(xi)	What is meant by Half-Life Period? Give one example.	(xii)	How does light affect the rate of a Chemical Reaction?
Q.No.4	(i)	Why Electron Affinity of Flourine is less than that of Chlorine?		
	(ii)	Write down names of factors affecting bond strength.		
	(iii)	Bond Distance is the Compromise distance between two Atoms. Explain with reason .		
	(iv)	How Electronegativity difference predict the nature of Bond?		
	(v)	Define the given terms : (i) Thermochemistry (ii) State Function		
	(vi)	Define the term Lattice Energy. Give example.		
	(vii)	Why it is necessary to mention the physical states of reactants and products in Thermochemical Reaction?		
	(viii)	Differentiate between Electronic Conduction and Electrolytic Conduction.		
	(ix)	How extraction of Na can be done by Electrolysis of Molten NaCl?		

(Part – II) | 3 x 8 = 24

Q.No.5	(a)	What is Combustion Analysis? How the percentages of various elements present in an Organic Compound are determined?	(4)
	(b)	What are Liquid Crystals? Give their six uses in daily life.	(4)
Q.No.6	(a)	250 cm^3 of Hydrogen is Cooled from 127°C to –27 °C by maintaining the Pressure constant. Calculate the new Volume of the gas at low Temperature.	(4)
	(b)	Describe J.J Thomson's Experiment for the measurement of e/m value of electron with diagram.	(4)
Q.No.7	(a)	Describe Postulates of Valence Shell Electron Pair Repulsion Theory (VSEPR).	(4)
	(b)	Calculate the pH of a Buffer Solution in which 0 . 11 Molar Concentration of CH_3COONa and 0 . 09 Molar Acetic Acid Solutions are present. (K_a for CH_3COOH is 1 . 85 x 10^{-5})	(4)
Q.No.8	(a)	How Enthalpy of a reaction be measured by using Glass Calorimeter?	(4)
	(b)	What is Lead Accumulator ? Describe discharging of Lead Accumulator.	(4)
Q.No.9	(a)	How is depression in Freezing Point measured by Beckmann's Apparatus?	(4)
	(b)	How does the Arrhenius Equation help us to calculate Energy of Activation of a Reaction?	(4)

Chemistry	(D)	L.K.No. 1011	Paper Code No. 6487
Paper I	(Objective Type)	Inter (Ist – A – Exam 2023)	
Time :	20 Minutes	Inter (Part - I)	(Group Ist)
Marks :	17	Session (2020 – 22) to (2022 – 24)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	Phenomenon of Isotopy was first discovered by : (A) Millikan (B) J. Perin (C) Soddy (D) J.J Thomson
(2)	Temperature and quantity of a gas remains constant in : (A) Charles's Law (B) Avogadro's Law (C) Boyle's Law (D) Dalton's Law
(3)	A Filtration Process could be very time consuming if it were not aided by a gentle suction which is developed : (A) If the paper covers upto its circumference of funnel (B) If the Paper has got small sized pores in it (C) If Stem of the funnel is so large that it dips into the filtrate (D) If the paper fits tightly
(4)	The largest number of Molecules are present in ; (A) 4.8 g of C_2H_5OH (B) 3.6 g of H_2O (C) 2.8 g of CO (D) 5.4 g of N_2O_5
(5)	S.I. Unit of Pressure is : (A) Torr (B) mm of Hg (C) Pound $inch^{-2}$ (D) Nm^{-2}
(6)	The nature of the positive rays depend on : (A) Nature of Anode (B) Nature of Cathode (C) Nature of the Residual Gas (D) Nature of Discharge Tube
(7)	In Order to raise the boiling point of water upto 110° C, the external pressure should be : (A) Between 760 Torr and 200 Torr (B) Between 760 Torr and 1200 Torr (C) 765 Torr (D) Any Value of Pressure
(8)	Acetone and Chloroform are soluble in each other due to : (A) Instantaneous Dipole (B) Ion Dipole Interaction (C) Intermolecular Hydrogen Bonding (D) London Dispersion Forces
(9)	Which of the given do not obey Octet Rule : (A) CH_4 (B) NH_3 (C) BCl_3 (D) H_2O
(10)	The reaction for synthesis of NH_3 , the value of Δn is : $N_2 + 3H_2 \rightleftharpoons 2NH_3$: (A) +2 (B) −2 (C) +1 (D) +4
(11)	The term which is not a State Function : (A) Volume (B) Enthalpy (C) Work (D) Internal Energy
(12)	For the reaction $NaOH + HCl \longrightarrow NaCl + H_2O$ the change in Enthalpy called : (A) Heat of Reaction (B) Heat of Neutralization (C) Heat of Combustion (D) Heat of Formation
(13)	An excess of Aqueous Silver Nitrate is added to aqueous Barium Chloride and precipitate is removed by filtration. What are main Irons in Filtrate : (A) Ag^+ and NO_3^- (B) Ag^+, Ba^{2+} and NO_3^- (C) Ba^{2+} and NO_3^- (D) Ba^{2+}, NO_3^- and Cl^-
(14)	If Salt Bridge is not used between two Half Cells then Voltage : (A) Decrease Rapidly (B) Decrease Slowly (C) Drops to Zero (D) Does not change
(15)	With Increase of 10° Celsius temperature rate of reaction double, this increase of rate is due to : (A) Decrease in Activation Energy (B) Decrease in the Number of Collision between Reactants Molecules (C) Increase in the number of effective collisions (D) Increase in Energy of Activation
(16)	A solution of 10 % w / v of Glucose, the volume in which its 1 gram mole is dissolved will be : (A) 1 dm^3 (B) 1.8 dm^3 (C) 200 cm^3 (D) 900 cm^3
(17)	The Oxidation Number of Sulphur in SO_4^{2-} is : (A) 4 (B) 3 (C) 6 (D) 0

Roll No. (Group Ist)	1011 - 18000	Inter (Part – I)	Session (2020 – 22) to (2022 – 24)
Chemistry (Subjective)	Inter (Ist – A – Exam – 2023)	Time 2 : 40 Hours	Marks : 68

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

22 x 2 = 44

Q.No.2	(i)	Magnesium Atom is twice heavier than Carbon Atom. Justify the statement.		
	(ii)	What is Critical Temperature of a Gas ? What is its importance for Liquefaction of Gases?		
	(iii)	What is Molecular Ion ? Give an example.	(iv)	What are Isotopes ? Give example
	(v)	What are Natural and Artificial Plasma ?	(vi)	Define Boyle's Law. Give its Mathematical Expression.
	(vii)	Why is it necessary to decrease the pressure in the discharge tube to get the Cathode Rays ?	(viii)	Why e / m value of the Cathode Rays is just equal to that of Electron ?
	(ix)	What are defects of Bohr's Atomic Model ?	(x)	Define Lattice Energy and give example.
	(xi)	State First Law of Thermodynamics and give its Mathematical Form.	(xii)	What is State and State Function ? Differentiate.
Q.No.3	(i)	Differentiate between Molality and Molarity.	(ii)	Why is the Aqueous Solution of Ammonium Chloride Acidic ?
	(iii)	What is meant by Water of Crystallization ? Give two examples.	(iv)	What are Pseudo First Order Reactions ? Give an example.
	(v)	What do you mean by Inhibitor ? Give an example.	(vi)	Define Half Life Period . How is it related to order of reaction ?
	(vii)	How can the decolourization of undesirable colours be carried out for freshly prepared crystals ?	(viii)	What is Solvent Extraction ? Give its importance.
	(ix)	What is Sintered Glass Crucible ? Give its significance.	(x)	Evaporation causes cooling. Give the reason.
	(xi)	What are Dipole Induced Dipole Forces ?	(xii)	Define Polymorphism. Give an example.
Q.No.4	(i)	Size of an Anion is always greater than that of its Parent Atom. Justify.		
	(ii)	How bond length is affected by change in Hybridization state ?		
	(iii)	Why He_2 does not exist under Normal Condition ?		
	(iv)	Justify that Chemical Equilibrium is dynamic in nature.		
	(v)	Why do we need buffers in daily life ?		
	(vi)	How some reactions are effected by change in Pressure ?		
	(vii)	Na and K can displace Hydrogen from Acids but Pt , Pd and Cu can not ? Explain		
	(viii)	Lead Accumulator is chargeable battery Justify.		
	(ix)	How reactivity of Metals is studied with the help of Electrochemical Series ?		

(Part – II)

3 x 8 = 24

Q.No.5	(a)	Define Stoichiometry. Give its assumptions. Mention two important laws which help to perform the Stoichiometric calculation. 1 + 2 + 1 =	(4)
	(b)	Calculate the Mass of 1 dm^3 of NH_3 Gas at 30 ^oC and 1000 mm Hg pressure, considering that NH_3 is behaving ideally.	(4)
Q.No.6	(a)	Define Hydrogen Bonding and explain its any three applications. 1+3 =	(4)
	(b)	State and explain first law of Thermodynamics. 1+3 =	(4)
Q.No.7	(a)	Describe any four properties of Cathode Rays.	(4)
	(b)	What is the Percentage Ionization of Acetic Acid in a Solution in which 0 . 1 Moles of it has been dissolved per dm^3 of the solution ? (% Ionization = 1 . 3)	(4)
Q.No.8	(a)	Discuss the shapes and geometry of CH_4 and H_2O with reference to sp^3 Hybridization.	(4)
	(b)	Write only four industrial applications of Electrolytic Process.	(4)
Q.No.9	(a)	Give Graphical Explanation for Elevation of Boiling Point of a Solution.	(4)
	(b)	How Rate of Reaction depends upon the following factors : (i) Nature of Reactants (ii) Surface Area	(4)

Bahawalpur Board-2023

Chemistry	(B)	L.K.No. 1012	Paper Code No. 6484
Paper I	(Objective Type)	Inter (Ist – A – Exam 2023)	
Time :	20 Minutes	Inter (Part - I)	(Group 2nd)
Marks :	17	Session (2020 – 22) to (2022 – 24)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	With the increase of 10° C temperature, the rate of reaction doubles. This increase in rate of reaction is due to : (A) Decrease in Activation Energy of reaction (B) Decrease in the Number of Effective Collisions between Reactant Molecules (C) Increase in activation energy of reactants (D) Increase in number of effective collisions
(2)	Which of the following product is obtained at Cathode during electrolysis of aqueous solution of Sodium Chloride : (A) Na (B) Cl_2 (C) H_2 (D) O_2
(3)	If a Salt Bridge is not used between two Half Cells then Voltage : (A) Decreases Rapidly (B) Decreases Slowly (C) Does not change (D) Drops to Zero
(4)	A solution of glucose is 10 % w/v , the volume in which 1 g mole of it is dissolved will be : (A) $1\ dm^3$ (B) $1.8\ dm^3$ (C) $200\ cm^3$ (D) $900\ cm^3$
(5)	An excess of $AgNO_3$ is added to Aqueous Barium Chloride and precipitate is removed by filtration. What are the main ions in Filtrate : (A) Ag^+ and NO_3^- only (B) Ag^+ and Ba^{2+} and NO_3^- (C) Ba^{2+} and NO_3^- only (D) Ba^{2+} and NO_3^- and Cl^-
(6)	For an Exothermic Reversible reaction, increase in temperature will favour which : (A) Forward Direction (B) Reverse Direction (C) Equilibrium will not disturbed (D) Initially in forward direction, then in reverse direction
(7)	Which of the given is not a State Function : (A) Heat (B) Volume (C) Pressure (D) Enthalpy
(8)	For a given process, heat changes at constant pressure (q_p) and heat changes at constant volume (q_v) are related to each other : (A) $q_p = q_v$ (B) $q_p < q_v$ (C) $q_p > q_v$ (D) $q_p = \frac{q_v}{2}$
(9)	Which of following Hydrogen Halide has highest percentage of Ionic Character : (A) HCl (B) HBr (C) HF (D) HI
(10)	Quantum Number value for 2p Orbital is : (A) $n = 2, \ell = 1$ (B) $n = 1, \ell = 2$ (C) $n = 1, \ell = 0$ (D) $n = 2, \ell = 0$
(11)	Which of the following Solid is an example of Covalent Solid with layered structure : (A) Diamond (B) Silicon Carbide (C) Aluminium Nitride (D) Graphite
(12)	Diamond is bad conductor because : (A) It has tight structure (B) It has high density (C) Is Transparent to Light (D) There are no free electrons present in crystal of diamond to conduct electricity
(13)	Graph between Pressure and Volume at constant temperature is called : (A) Isobar (B) Isochor (C) Isotherm (D) Spectrograph
(14)	The deviation of Gas from Ideal Behaviour is maximum at : (A) -10°C and 5.0 atm (B) -10°C and 2.0 atm (C) 100°C and 2.0 atm (D) 0°C and 2.0 atm
(15)	The colour of Iodine in CCl_4 solution is : (A) Brown (B) Purple (C) Grey (D) Black
(16)	Isotopes differ in : (A) Properties which depends upon mass (B) Arrangement of Electrons in Orbitals (C) Chemical Properties (D) The extent to which they may be affected in electromagnetic field
(17)	The largest number of Molecules are present in (A) 3.6 g of H_2O (B) 4.8 g of C_2H_5OH (C) 2.8 g of CO (D) 5.4 g of N_2O_5

Roll No. (Group 2nd)	1012 - /6000	Inter (Part – I)	Session (2020 – 22) to (2022 – 24)
Chemistry (Subjective)	Inter (Ist – A – Exam – 2023)		Time 2 : 40 Hours Marks : 68

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary. | Part - I | 22 x 2 = 44

Q.No.2	(i)	Differentiate between Actual Yield and Theoretical Yield.		
	(ii)	N_2 and CO have same number of Electrons, Protons and Neutrons. Justify it.		
	(iii)	Define term Atomicity. Give example.	(iv)	Why rate of diffusion of NH_3 gas is more than HCl gas ?
	(v)	Derive Boyle's Law from Kinetic Molecular Theory.	(vi)	Differentiate between Continuous Spectrum and Line Spectrum.
	(vii)	Write two uses of Plasma.	(viii)	What is Zeeman's Effect ?
	(ix)	Cathode Rays are charged Particles. Justify.	(x)	What is the Physical Significance of equation $\Delta H = q_p$?
	(xi)	Differentiate between System and Surrounding.	(xii)	State Ist Law of Thermodynamics. Give its mathematical equation.
Q.No.3	(i)	Define Solubility and Solubility Curves.	(ii)	Give two applications of Colligative Properties.
	(iii)	What is Hydrolysis ? Give an example.	(iv)	What do you mean by Catalyst for a Catalyst ? Give one example.
	(v)	How surface area affect the rate of a Chemical Reaction?	(vi)	Define Rate of Reaction and give its Mathematical Expression.
	(vii)	Evaporation takes place at all temperatures. Explain with reason.	(viii)	Why Methane is a gas while Hexane is a Liquid ?
	(ix)	Define Isomorphism with an example.	(x)	Define Sublimation with two examples.
	(xi)	How Decolouration of undesirable colour is done for crystals in Crystallization?	(xii)	Why concentrated HCl and $KMnO_4$ solutions can be filtered by Gooch Crucible?
Q.No.4	(i)	The bond angles of H_2O and NH_3 are not 109.5^o like that of CH_4. Although O - and N - atoms are sp^3 Hybridized. Justify.		
	(ii)	The radius of an Atom cannot be determined precisely. Give reason.		
	(iii)	Differentiate between Sigma and PI Bond.		
	(iv)	Why solubility of Glucose in water is increased by increasing the temperature ?		
	(v)	Write equilibrium constant expression of the following reaction : $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$		
	(vi)	Differentiate between Reversible and Irreversible Reactions.		
	(vii)	A Salt Bridge maintains the electrical neutrality in the cell. Give the reason.		
	(viii)	Calculate the Oxidation Number of Chromium in the given compounds : (i) K_2CrO_4 (ii) $Cr_2O_7^{-2}$		
	(ix)	Write the function of Salt Bridge.		

(Part – II) | 3 x 8 = 24

Q.No.5	(a)	What is Empirical Formula ? Discuss steps to calculate Empirical Formula.	(4)
	(b)	What pressure is exerted by mixture of 2.00 g of H_2 and 8.00 g of N_2 at 273 K in 10 dm^3 Vessel ?	(4)
Q.No.6	(a)	How does Hydrogen Bonding explain the following indicated properties of the substances : (i) Hydrogen Bonding in Proteins (ii) Formation of Ice and its lesser density than Liquid Water	(4)
	(b)	State Hess's Law of Constant Heat Summation. Give two examples.	(4)
Q.No.7	(a)	Describe an experiment for the measurement of e/m value of electron. Also draw the diagram.	(4)
	(b)	When 1.00 Mole of steam and 1.00 mole of Carbon Monoxide are allowed to reach equilibrium 33.3 % of the equilibrium mixture is Hydrogen. Calculate the value of K_p. State the units of K_p.	(4)
Q.No.8	(a)	What is meant by Atomic Orbital Hybridization ? Explain its one type in detail.	(4)
	(b)	Discuss Fuel Cells. Also give chemical equations of these fuel cells.	(4)
Q.No.9	(a)	Define Solubility Curves. Discuss Solubility Curves of NaCl and $Ce_2(SO_4)_3$	(4)
	(b)	Differentiate between Homogeneous and Heterogeneous Catalysis. Give two examples of each.	(4)

Bahawalpur Board-2022

Chemistry	(B)	L.K.No. 1110	Paper Code No. 6484
Paper I	(Objective Type)	Inter – A – 2022	(Group 2nd)
Time :	20 Minutes	Inter (Part - I)	
Marks :	17	Session (2020-22) to (2021 – 23)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	The bond order for He_2 is : (A) 0 (B) 1 (C) 2 (D) 3
(2)	Orbitals having same energy are called : (A) Hybrid Orbitals (B) Valence Orbitals (C) Degenerate Orbitals (D) d - Orbitals
(3)	At Murree Hills , water boils at : (A) $98^{\circ}C$ (B) $100^{\circ}C$ (C) $0^{\circ}C$ (D) $50^{\circ}C$
(4)	Number of Molecules in one dm^3 of water is close to : (A) $\frac{6.02}{22.4}$ (B) $\frac{12.04}{22.4}$ (C) $\frac{18}{22.4} \times 10^{23}$ (D) $55.6 \times 6.02 \times 10^{23}$
(5)	Drying Agent used in Desiccator is : (A) NH_4Cl (B) AgCl (C) NaCl (D) $CaCl_2$
(6)	The largest number of Molecules are present in : (A) 3.6 g of H_2O (B) 4.8 g of C_2H_5OH (C) 2.8 g of CO (D) 5.4 g of N_2O_5
(7)	The rate of Reaction : (A) Increases as the reaction proceeds (B) Remain the same as the reaction proceeds (C) Decreases as the reaction proceeds (D) May decrease or increase as the reaction proceeds
(8)	Stronger the Oxidizing Agent , greater is the : (A) Oxidation Potential (B) Reduction Potential (C) Redox Potential (D) EMF of Cell
(9)	The Molal Boiling Point Constant is the ratio of the Elevation in Boiling Point to : (A) Molarity (B) Molality (C) Mole Fraction of Solvent (D) Mole Fraction of Solute
(10)	The pH of 10^{-3} mol dm^{-3} of an aqueous solution of H_2SO_4 is : (A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5
(11)	Calorie is equivalent to : (A) 0.4184 J (B) 41.84 J (C) 4.184 J (D) 418.4 J
(12)	Which of the Hydrogen Halides has the highest percentage of Ionic Character : (A) HCl (B) HBr (C) HF (D) HI
(13)	Quantum Number Values for 2p Orbitals are : (A) $n = 2, \ell = 1$ (B) $n = 1, \ell = 2$ (C) $n = 1, \ell = 0$ (D) $n = 2, \ell = 0$
(14)	Which of the given is a Pseudo Solid : (A) CaF_2 (B) Glass (C) NaCl (D) All these
(15)	The molar volume of CO_2 is maximum at : (A) STP (B) $127^{\circ}C$ and 1 atm (C) $0^{\circ}C$ and 2 atm (D) $273^{\circ}C$ and 2 atm
(16)	Solvent Extraction is an equilibrium process and is controlled by : (A) Law of Mass Action (B) The Amount of Solvent used (C) Distribution Law (D) The amount of Solute
(17)	The mass of one mole of electrons is : (A) 1.008 mg (B) 0.55 mg (C) 0.184 mg (D) 1.673 mg

Roll No.	1110 - 20000	Session (2020 –22) to (2021 – 23)	Inter (Part – I)
Chemistry (Subjective)	Inter – A – 2022	Time 2 : 40 Hours Marks : 68	Group 2nd

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

22 x 2 = 44

Q.No.2	(i)	180 g of Glucose and 342 g of Sucrose have the same number of Molecules. Justify it.		
	(ii)	No individual Neon Atom in the sample of the element has a mass of 20 . 18 amu. Give reason.		
	(iii)	Why is the Actual Yield mostly less than the Theoretical Yield ?		
	(iv)	What is Retardation Factor (R_f) ? Why it has no unit ?		
	(v)	How are undesirable colours removed during crystallization ?	(vi)	Pilots feel uncomfortable breathing at higher altitudes, why ?
	(vii)	What is Solvent Extraction ?	(viii)	Define Diffusion. Give example.
	(ix)	What is Critical Temperature (Tc) ? Give an example.	(x)	How is basic Buffer Solution prepared ? Give an example.
	(xi)	What is Common Ion Effect ? Give an example	(xii)	Define pH and pOH .
Q.No.3	(i)	How Aquatic Animals owe their lives under blanket of Ice in Winter ?		
	(ii)	Justify Earthenware Vessels keep water cool .		
	(iii)	Ionic Crystals are highly brittle . Justify it.		
	(iv)	Why Electrical Conductivity of metal decreases with rise of temperature ?		
	(v)	Why it is necessary to decrease pressure in a discharge tube to get Cathode Rays ?		
	(vi)	Give any two properties of Neutron.		
	(vii)	Define Hund's Rule with an example.		
	(viii)	Differentiate between Zeeman Effect and Stark Effect.		
	(ix)	In summer, the antifreeze solution protect the liquid from boiling over. Give reason.		
	(x)	Why in Hydrates Cation attracts more water molecules than anion ?		
	(xi)	The radioactive decay is always First Order Reaction. Justify it.		
	(xii)	Sum of Co-efficients of Balanced Equation is not necessarily important to give order of reaction. Explain.		
Q.No.4	(i)	What is Octet Rule ? Give two examples in which Octet Rule is not obeyed ?		
	(ii)	Size of Anion is larger than its Neutral Atom , why ?		
	(iii)	What is Ionization Energy ? Give units.		
	(iv)	What is Ammonium Ion ? How it is formed ?		
	(v)	What is the difference between Internal Energy and Enthalpy ?		
	(vi)	What is Hess's Law of Constant Heat Summation ?		
	(vii)	Burning of Candle is spontaneous process , why ?		
	(viii)	Calculate the Oxidation Number of Chromium in $K_2Cr_2O_7$.		
	(ix)	What is Metallic Conduction ? Give example.		

(Part – II)

3 x 8 = 24

Q.No.5	(a)	What is a Limiting Reactant ? How does it control the quantity of product in a chemical reaction ? Give two examples.	(4)
	(b)	Explain the Millikan's Oil Drop Experiment to determine the charge of an Electron.	(4)
Q.No.6	(a)	250 cm^3 of the sample of Hydrogen Effuses four times as rapidly as 250 cm^3 of an unknown gas. Calculate the Molar Mass of Unknown Gas.	(4)
	(b)	Explain the measurement of Electrode Potential of Zinc (Zn). 3 + 1 =	(4)
Q.No.7	(a)	Explain AB_3 Type with no lone pair of electron and with multiple bond according to VSEPR Theory.	(4)
	(b)	What do you mean by Enthalpy ? Also prove that $\Delta H = q_p$ 1 + 3 =	(4)
Q.No.8	(a)	How Boiling Point and External Pressure are related ? Discuss applications also.	(4)
	(b)	The solubility product of Ag_2CrO_4 is 2 . 6 x 10^{-2} at 25°C . Calculate solubility of the compound.	(4)
Q.No.9	(a)	What do you mean by Elevation of Boiling Point ? Explain Landsberger's Method for its measurement. 1 + 3 =	(4)
	(b)	Discuss Half Life Method and method of large Excess to find order of a reaction. 2 + 2 =	(4)

Chemistry (D)		L.K.No. 1109	Paper Code No. 6487
Paper I	(Objective Type)	Inter – A – 2022	(Group Ist)
Time :	20 Minutes	Inter (Part - I)	
Marks :	17	Session (2020 - 22) to (2021 – 23)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1	
(1)	The mass of one mole of electron is : (A) 1 . 008 mg (B) 0 . 55 mg (C) 0 . 184 mg (D) 1 . 67 mg
(2)	Solvent Extraction is an equilibrium process and it is controlled by : (A) Law of Mass Action (B) Amount of Solvent used (C) Distribution Law (D) The amount of Solute
(3)	During the process of Crystallization, the hot saturated solution : (A) Is Cooled very slowly to get large sized crystals (B) Is Cooled at a moderate rate to get medium sized crystals (C) Is Evaporated to get the crystals of the product (D) Is mixed with an immiscible liquid to get the pure crystals of product
(4)	The number of moles of CO_2 which contains 8 . 0 g of Oxygen : (A) 0 . 25 (B) 0 . 50 (C) 1 . 0 (D) 1 . 50
(5)	Which of the following will have the same number of Molecules : (A) 280 cm^3 of CO_2 and 280 cm^3 of N_2O (B) 11 . 2 dm^3 of CO_2 and 32 g of O_2 (C) 44 g of CO_2 and 11 . 2 dm^3 of CO (D) 28 g of N_2 and 5 . 6 dm^3 of Oxygen
(6)	When water freezes at 0 ^oC , its density decreases due to : (A) Cubic Structure of Ice (B) Empty Spaces present in the structure of Ice (C) Change of Bond Length (D) Change of Bond Angles
(7)	The molecule of CO_2 in Dry Ice form the : (A) Ionic Crystals (B) Covalent Crystals (C) Molecular Crystals (D) All these
(8)	Equal Masses of Methane and Oxygen are mixed in an empty container at 25 ^oC. The fraction of total pressure exerted by Oxygen is : (A) $\frac{1}{3}$ (B) $\frac{8}{9}$ (C) $\frac{1}{9}$ (D) $\frac{16}{17}$
(9)	The nature of the positive rays depends on : (A) The nature of the electrode (B) The nature of the discharge tube (C) The nature of the residual gas (D) All these
(10)	The Paramagnetic Property of O_2 is well explained on the basis of : (A) VSEPR (B) VBT (Valence Bond Theory) (C) MOT (Molecular Orbital Theory) (D) None of these
(11)	The number of Bonds in Nitrogen Molecule is : (A) One σ and one π (B) One σ and two π (C) Three Sigma Only (D) Two σ and one π
(12)	The wave number of the light emitted by a source is $2 \times 10^6\ m^{-1}$. The Wavelength of this light will be : (A) 500 nm (B) 500 m (C) 200 nm (D) 5×10^7 m
(13)	Calorie is equivalent to : (A) 0 . 4184 J (B) 41 . 84 J (C) 4 . 184 J (D) 418 . 4 J
(14)	The Cathodic Reaction in the Electrolysis of dil . H_2SO_4 with Pt Electrode is : (A) Reduction (B) Oxidation (C) Both Oxidation and Reduction (D) None of these
(15)	The molal boiling point constant is the ratio of the elevation in boiling point to : (A) Molarity (B) Molality (C) Mole Fraction of Solvent (D) Mole Fraction of Solute
(16)	The pH of 10^{-3} mol dm^{-3} of an aqueous solution of H_2SO_4 is : (A) 3 . 0 (B) 2 . 7 (C) 2 . 0 (D) 1 . 5
(17)	The rate of Reaction : (A) Increase as reaction proceed (B) Decrease as reaction proceed (C) Remain the same as the reaction proceed (D) None of these

Roll No.	1109 - 18000	Session (2020 – 22) to (2021 – 23)	Inter (Part – I)
Chemistry (Subjective)	**Inter – A – 2022**	Time 2 : 40 Hours Marks : 68	**Group Ist**

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

22 x 2 = 44

Q.No.2	(i)	What is the function of Magnetic Field in Mass Spectrometer ?		
	(ii)	Differentiate between Molecular and Empirical Formula.		
	(iii)	Define Gram Atom with one example.	(iv)	Define R_f . What are its units ?
	(v)	State Boyl's Law . Also write its mathematical form.	(vi)	How Saturated Solution is prepared for Crystallization ?
	(vii)	How is Plasma formed ?	(viii)	Describe Sublimation Process.
	(ix)	Differentiate between Diffusion and Effusion.	(x)	What is meant by Ionic Product of Water ?
	(xi)	How Acidic Buffer can be prepared ?	(xii)	Define pK_a and pK_b
Q.No.3	(i)	Define Isomorphism. Give one example.	(ii)	One feels sense of cooling under the fan after bath . Give the reason.
	(iii)	What is Aufbau Principle ?	(iv)	What are Zeeman Effect and Stark Effect?
	(v)	What is Spin Quantum Number ? Give its two values.	(vi)	What do you mean by Inhibitor ? Give an example.
	(vii)	What are Dipole Induced Dipole Forces ?	(viii)	Evaluate the Mass of Electron.
	(ix)	What is Fractional Crystallization ? How is it useful ?	(x)	Define Activation Energy and Activated Complex.
	(xi)	Calculate the Mass of Urea in 100 g of H_2O in 0 . 3 Molal Solution.		
	(xii)	How can the Vacuum Distillation be employed to avoid decomposition of a sensitive liquid ?		
Q.No.4	(i)	Why the Second Ionization Energy is greater than First Ionization Energy ?		
	(ii)	Define Octet Rule. Give an example.		
	(iii)	Why CO_2 and CS_2 have linear structure ?		
	(iv)	Throw light on the term Bond Order.		
	(v)	Define Enthalpy of Formation (ΔH^0_f) and give an example.		
	(vi)	Define Exothermic Reaction by giving an example.		
	(vii)	What do you know about State Function ?		
	(viii)	Calculate the Oxidation Number of Manganese in $KMnO_4$.		
	(ix)	What is the function of Salt Bridge ?		

(Part – II)

3 x 8 = 24

Q.No.5	(a)	Explain Isotope with their relative abundance. 1 + 1 + 1 + 1 =	(4)
	(b)	Explain Rutherford's Model of Atom . Give its defects. 2 + 2 =	(4)
Q.No.6	(a)	Calculate the mass of 1 dm^3 of NH_3 gas at 30 ^oC and 1000 mm Hg pressure, considering that NH_3 is behaving ideally.	(4)
	(b)	Briefly explain the working of Galvanic Cell.	(4)
Q.No.7	(a)	Explain the Geometry of Ethene ($CH_2 = CH_2$) using Hybridization. 3 + 1 =	(4)
	(b)	State and explain First Law of Thermodynamics. 1 + 3 =	(4)
Q.No.8	(a)	How Vapor Pressure is measured by Manometric Method ?	(4)
	(b)	The Solubility of PbF_2 at 25 ^oC is 0 . 64 g / dm^{-3} . Calculate Ksp of PbF_2 .	(4)
Q.No.9	(a)	How will you define Raoult's Law in three different forms with Mathematical Expression?	(4)
	(b)	What is Catalysis ? Give its types with examples.	(4)

Chemistry	(B)	L.K.No. 1109	Paper Code No. 6483
Paper I	(Objective Type)	Inter – A – 2021	(Group Ist)
Time	20 Minutes	Inter (Part - I)	
Marks	17	Session (2017 -19) to (2020 – 22)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1

(1) With increase of $10^{\circ}C$ temperature , the rate of reaction doubles. This increase in rate of reaction is due to :
(A) Decrease in activation energy of reaction (B) Increase in activation energy of reactants
(C) Decrease in number of Collisions between reactant molecules
(D) Increase in number of effective collision

(2) If the Salt Bridge is not used between two half cells , then the Voltage :
(A) Decreases Rapidly (B) Decreases Slowly (C) Does not change (D) Drops to Zero

(3) 18 g Glucose is dissolved in 90 g of water. The relative lowering of Vapour Pressure is equal to :
(A) $\frac{1}{5}$ (B) 5.1 (C) $\frac{1}{51}$ (D) 6

(4) The pH of 10^{-3} moles dm^{-3} of an aqueous solution of H_2SO_4 is :
(A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5

(5) The solution which resists change in its pH either an Acid or Base is added in it is called :
(A) Buffer Solution (B) Acid (C) Base (D) Alkali

(6) The change in Heat Contents of a chemical reaction at constant temperature and pressure is called :
(A) Enthalpy Change (B) Bond Energy (C) Heat of Sublimation (D) Internal Energy Change

(7) The Bond which is formed by mutual sharing of Electrons is called :
(A) Ionic Bond (B) Covalent Bond (C) Metallic Bond (D) Coordinate Covalent Bond

(8) Which of the following species has unpaired electrons in Antibonding Molecular Orbitals :
(A) O_2^{2+} (B) N_2^{2-} (C) B_2 (D) F_2

(9) The velocity of Photon is : (A) Independent of its Wavelength (B) Depends on its Wavelength
(C) Equal to square of its Amplitude (D) Depends on its source

(10) The nature of the positive rays depends on :
(A) The nature of the Electrode (B) The nature of the Discharge Tube
(C) The nature of the Residual Gas (D) The nature of Anode

(11) Ionic Solids are characterized by : (A) Low Melting Points (B) Good Conductivity in Solid State
(C) High Vapour Pressure (D) Solubility in Polar Solvents

(12) When water freezes at $0^{\circ}C$, its density decreases due to :
(A) Cubic Structure of Ice (B) Empty Spaces present in the structure of Ice
(C) Change of Bond lengths (D) Change of Bond Angles

(13) The Molar Volume of CO_2 is maximum at :
(A) S.T.P (B) $127^{\circ}C$ and 1 atm (C) $0^{\circ}C$ and 2 atm (D) $273^{\circ}C$ and 2 atm

(14) Equal Masses of Methane and Oxygen are mixed in an empty container at $25^{\circ}C$. The fraction of total pressure exerted by Oxygen is : (A) $\frac{1}{3}$ (B) $\frac{8}{9}$ (C) $\frac{1}{9}$ (D) $\frac{16}{17}$

(15) The comparative rates at which the solutes move in Paper Chromatography depends on :
(A) The Size of Paper (B) R_f values of Solutes
(C) Temperature of the Experiment (D) Size of the Chromatographic Tank used

(16) The Branch of Chemistry which deals with the calculations based on balanced chemical equation is called : (A) Thermochemistry (B) Thermometry (C) Stoichiometry (D) Physical Chemistry

(17) Average Atomic Mass of Neon is : (A) 20.00 (B) 20.18 (C) 20.20 (D) 22.0

Roll No.	1109 - /6000	Session (2017 –19) to (2020 – 22)	Inter (Part – I)
Chemistry (Subjective)	Inter – A – 2021	Time 2 : 40 Hours Marks : 68	Group Ist

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

22 x 2 = 44

Q.No.2	(i)	Chemical properties of Isotopes of same element are same, why ?		
	(ii)	No individual Neon Atom in the Sample of the Element has a mass of 20 . 18 amu. Explain it.		
	(iii)	Write any two applications of Boiling Point Elevation and Freezing Point Depression Phenomena.		
	(iv)	Write any two applications of Chromatography.		
	(v)	Define Boyle's Law with its mathematical equation.		
	(vi)	Draw Isotherms of a Gas at two different temperatures.		
	(vii)	Define Absolute Zero and write its value in Celsius Scale.		
	(viii)	Define Heat of a Solution by giving two examples.		
	(ix)	Write number of Isotopes of Cadmium and Tin.	(x)	Write Quantitative Statement of Charles' Law.
	(xi)	Define Sublimation with an example.	(xii)	Define Solubility and Solubility Curves.
Q.No.3	(i)	What are types of Intermolecular Forces ?	(ii)	What are Cleavage Planes ?
	(iii)	How Neutron is used as Projectile ?	(iv)	Draw Shapes of d – Orbitals.
	(v)	Define Law of Mass Action.	(vi)	What is a Zero Order Reaction ?
	(vii)	How detergents perform cleansing action ?	(viii)	What is method of Large Excess ?
	(ix)	What is Symmetry and Symmetry Elements?	(x)	Why the Energy of Bound Electron is Zero?
	(xi)	What is Common Ion Effect? Give example.	(xii)	Name different lines of Hydrogen Spectrum.
Q.No.4	(i)	Define Ionic Bond by giving one example.	(ii)	Define and explain Octet Rule.
	(iii)	Define Ionization Energy by giving an example.	(iv)	Define Electronegativity by giving one example.
	(v)	State Ist Law of Thermodynamics. Also write its mathematical form.		
	(vi)	Define Standard Enthalpy of Neutralization by giving one example.		
	(vii)	SHE acts as Anode when connected with Cu – electrode. Explain.		
	(viii)	The standard oxidation potential of Zn is + 0 . 76 V and its reduction potential is - 0 . 76 V. Explain with reason.		
	(ix)	How Impure Copper can be purified by Electrolytic Process ? Explain with reason.		

(Part – II)

Q.No.5	(a)	When Limestone ($CaCO_3$) is roasted, quicklime (CaO) is produced as $CaCO_3 \longrightarrow CaO + CO_2$ The actual yield of CaO is 2 . 5 Kg, when 4 . 5 Kg of Limestone is roasted. What is the percentage yield of this reaction ?	(4)
	(b)	What are London Dispersion Forces ? Give factors affecting them specially for Halogens and Hydrocarbons .	(4)
Q.No.6	(a)	Derive General Gas Equation. Also verified Gas Laws from it.	(4)
	(b)	What is J.J. Thomson's Experiment for determining e/m value of Electron?	(4)
Q.No.7	(a)	What is Ionization Energy ? What is its Trend in Periodic Table ?	(4)
	(b)	Explain Glass Calorimeter for the measurement of Enthalpy of a Reaction.	(4)
Q.No.8	(a)	Explain Arrhenius Equation. How does it help us to calculate the energy of activation of a reaction?	(4)
	(b)	The equilibrium constant for the reaction between Acetic Acid and Ethyl Alcohol is 4 . 0. A mixture of 3 moles of Acetic Acid and one mole of C_2H_5OH is allowed to come to equilibrium. Calculate the amount of Ethyl Acetate at equilibrium stage in number of moles and grams. Also calculate the masses of reactants left behind.	(4)
Q.No.9	(a)	(i) Differentiate between Ideal and Non – Ideal Solution with any two points of difference. (ii) Define the term Solubility and Solubility Curves.	(4)
	(b)	Define Oxidation Number and state any six rules for assigning of Oxidation Number.	(4)

Chemistry	(B)	L.K.No. 1110	Paper Code No. 6484
Paper I	(Objective Type)	Inter – A – 2021	(Group 2nd)
Time :	20 Minutes	Inter (Part - I)	
Marks :	17	Session (2017 -19) to (2020 – 22)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1

(1) In Zero Order Reaction , the rate is independent of :
(A) Temperature of Reaction (B) Concentration of Reactants
(C) Concentration of Products (D) Pressure of Reaction

(2) If the Salt Bridge is not used between two half cells , then the Voltage
(A) Decreases Rapidly (B) Decreases Slowly (C) Does not change (D) Drops to Zero

(3) 18 g Glucose is dissolved in 90 g of water. The relative lowering of Vapour Pressure is equal to :
(A) $\frac{1}{51}$ (B) 5.1 (C) $\frac{1}{5}$ (D) 6

(4) The pH of 10^{-3} mole dm^{-3} of an aqueous solution of H_2SO_4 is :
(A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5

(5) For which system does the equilibrium Constant K_c has units of (concentration)$^{-1}$? :
(A) $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ (B) $2NO_2(g) \rightleftharpoons N_2O_4(g)$
(C) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ (D) $2HF(g) \rightleftharpoons H_2(g) + F_2(g)$

(6) One Calorie is equivalent to : (A) 0.4184 J (B) 4.184 J (C) 41.84 J (D) 418.4 J

(7) Type of Hybridization in H_2O is : (A) sp (B) sp^2 (C) sp^3 (D) dsp^2

(8) Which of the Hydrogen Halide has the highest percentage of Ionic Character :
(A) HF (B) HCl (C) HBr (D) HI

(9) The value of Quantum Number ℓ = 0 , 1 , 2 , 3 , ------ (n – 1) is for :
(A) Principal Quantum Number (B) Azimuthal Quantum Number
(C) Magnetic Quantum Number (D) Spin Quantum Number

(10) The Velocity of Photon is : (A) Independent of its Wavelength (B) Depends on its Wavelength
(C) Equal to square of its Amplitude (D) Depends on its source

(11) The Crystal System of Sugar is : (A) Monoclinic (B) Cubic (C) Hexagonal (D) Triclinic

(12) London Dispersion Forces are the only forces present among the :
(A) Molecules of Water in Liquid State (B) Atoms of Helium in Gaseous State at high temperature
(C) Molecules of Solid Iodine (D) Molecules of Hydrogen Chloride Gas

(13) The value of R in SI Units System is :
(A) 8.3143 Nm K^{-1} $mole^{-1}$ (B) 0.0821 dm^3 atm K^{-1} $mole^{-1}$
(C) 8.3143 dm^3 atm K^{-1} $mole^{-1}$ (D) 0.0821 Nm K^{-1} $mole^{-1}$

(14) Number of Molecules in One dm^3 of water is close to :
(A) $\frac{6.02}{22.4} \times 10^{23}$ (B) $\frac{12.04}{22.4} \times 10^{23}$ (C) $\frac{18}{22.4} \times 10^{23}$ (D) $55.6 \times 6.02 \times 10^{23}$

(15) Solvent Extraction method is a particularly useful technique for separation when the product to be separated is :
(A) Non – Volatile or Thermally Unstable (B) Volatile or Thermally Stable
(C) Non – Volatile or Thermally Stable (D) Volatile or Thermally Unstable

(16) Number of Isotopes of Nickel is : (A) 2 (B) 3 (C) 4 (D) 5

(17) 27g of Al will react completely with how much mass of O_2 to produce Al_2O_3 :
(A) 8 g of Oxygen (B) 16 g of Oxygen (C) 32 g of Oxygen (D) 24 g of Oxygen

Roll No.	1110 - 14000	Session (2017 –19) to (2020 – 22)	Inter (Part – I)
Chemistry (Subjective)	Inter – A – 2021	Time 2 : 40 Hours Marks : 68	Group 2nd

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary. | Part - I | 22 x 2 = 44

Q.No.2	(i)	Why Actual Yield is less than Theoretical Yield ?		
	(ii)	Define Adsorption Chromatography and Partition Chromatography.		
	(iii)	What is Gram Atom and Gram Molecule ?	(iv)	What are Monoisotopic Elements?
	(v)	What is R_f Value ?	(vi)	What is Fractional Crystallization ?
	(vii)	Why Pilots feel Uncomfortable Breathing ?	(viii)	What is Natural and Artificial Plasma?
	(ix)	Derive Charles's Law from KMT.	(x)	What are Continuous Solubility Curves?
	(xi)	What is Absolute or Kelvin Scale of Temperature?	(xii)	Name four Colligative properties of Solutions.
Q.No.3	(i)	How concept of Hydrogen Bonding helps to explain structure of Ice ?		
	(ii)	What are Amorphous Solids ? Give two suitable examples.		
	(iii)	Write axes and angles of Tetragonal and Monoclinic Crystal System.		
	(iv)	Define Dipole Dipole Forces and London Dispersion Forces.		
	(v)	Write any four properties of Cathode Rays.		
	(vi)	Give reason for the production of Positive Rays.		
	(vii)	Write down defects of Rutherford's Model of an Atom.		
	(viii)	Differentiate between Atomic Emission Spectrum and Atomic Absorption Spectrum.		
	(ix)	How value of Equilibrium Constant (K_c) helps to predict extent of a reaction ?		
	(x)	State Le – Chatelier's Principle.		
	(xi)	Define Instantaneous and Average Rate of Reaction.		
	(xii)	Write down concept of Activation Energy and Activated Complex.		
Q.No.4	(i)	Cationic Radius is smaller than that of its Parent Atomic Radius why ?		
	(ii)	Draw the structure of H_2O according to VSEPR Theory.		
	(iii)	Define Enthalpy of Neutralization with example.		
	(iv)	Calculate the Oxidation Numbers of the elements underlined : (a) $Na_2\underline{P}O_4$ (b) $H\underline{P}O_3$		
	(v)	Why SHE acts as Cathode when connected with Z_n Electrode but SHE acts as Anode when connected with Cu ? Justify.		
	(vi)	State Hess's Law of Constant Heat Summation.		
	(vii)	π Bonds are more diffused than σ Bonds, justify.		
	(viii)	Write down the function of Salt Bridge.		
	(ix)	Define Ionic Bond with an example .		

(Part – II)

Q.No.5	(a)	10 gram of H_3PO_4 has been dissolved in excess of water to dissociate it completely into its ions. Calculate the number of Molecules in it. Also find out the number of positive and negative ions in case of complete dissociation in water $H_3PO_4 \rightleftharpoons 3H^+ + PO_4^{-3}$	(4)
	(b)	What is Liquid Crystal ? Also give its applications in daily life ?	(4)
Q.No.6	(a)	What is Plasma ? How it is formed ? Also give its characteristics.	(4)
	(b)	How the discovery of positive rays takes place ? Also give its only two characteristics.	(4)
Q.No.7	(a)	What is sp^3 Hybridization ? Explain the structure of Ammonia Molecule.	(4)
	(b)	Define and explain Hess's Law of constant heat summations with one example.	(4)
Q.No.8	(a)	Calculate the pH of a Buffer Solution in which 0.11 Molar CH_3COONa and 0.09 Molar Acetic Acid solutions are present. K_a for CH_3COOH is 1.85×10^{-5}	(4)
	(b)	Define and explain energy of activation by using Collision Theory.	(4)
Q.No.9	(a)	What is Raoult's Law ? Explain it.	(4)
	(b)	What is Electrochemical Series ? Give its two applications in detail.	(4)

Chemistry	(B)	L.K.No. 1113	Paper Code No. 6483
Paper I	(Objective Type)	Inter -A- 2019	(New Pattern)
Time :	20 Minutes	Inter (Part I)	Group Ist
Marks :	17	Session (2015 -17) to (2018 – 20)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1	
(1)	Unit of Rate Constant is same as that of the rate of reaction in : (A) First Order Reaction (B) Second Order Reaction (C) Zero Order Reaction (D) Third Order Reaction
(2)	Stronger the Oxidizing Agent, greater is the : (A) Oxidation Potential (B) Reduction Potential (C) Redox Potential (D) E.M.F. of Cell
(3)	The Molal Boiling Point Constant is the ratio of the elevation in boiling point to : (A) Molarity (B) Molality (C) Mole Fraction of Solvent (D) Mole Fraction of Solute
(4)	Molarity of Pure Water is : (A) 1 (B) 18 (C) 55.5 (D) 6
(5)	The solubility product of AgCl is 2.0×10^{-10} mol^2 dm^{-6}. The maximum concentration of Ag^+ ions in the solution is : (A) 2.0×10^{-10} mol dm^{-3} (B) 1.41×10^{-5} mol dm^{-3} (C) 1.0×10^{-10} mol dm^{-3} (D) 4.0×10^{-20} mol dm^{-3}
(6)	The change in heat energy of a chemical reaction at constant temperature and pressure is called : (A) Enthalpy Change (B) Bond Energy (C) Heat of Sublimation (D) Internal Energy Change
(7)	Which of the following species has unpaired electrons in antibonding molecular orbitals : (A) O_2^{2+} (B) N_2^{2-} (C) B_2 (D) F_2
(8)	Which of the following Molecules has Zero Dipole Moment : (A) NH_3 (B) $CHCl_3$ (C) BF_3 (D) H_2O
(9)	When 6d is complete, the entering electron goes into : (A) 7f (B) 7s (C) 7p (D) 7d
(10)	Quantum Number Values for 2p Orbitals are : (A) $n = 2, \ell = 1$ (B) $n = 1, \ell = 2$ (C) $n = 1, \ell = 0$ (D) $n = 2, \ell = 0$
(11)	Which of the given is Pseudo Solid : (A) CaF_2 (B) Glass (C) NaCl (D) All these
(12)	Acetone and Chloroform are soluble in each other due to : (A) Intermolecular Hydrogen Bonding (B) Instantaneous Dipole (C) Ion - Dipole Interaction (D) All these
(13)	The deviation of a Gas from ideal behaviour is maximum at : (A) -10°C, 5 atm (B) -10°C, 2 atm (C) 100°C, 2 atm (D) 0°C, 2 atm
(14)	Pressure remaining constant, at which temperature the volume of a gas will become twice of what it is at 0°C : (A) 546°C (B) 200°C (C) 546 K (D) 273 K
(15)	Solvent Extraction is an equilibrium process and it is controlled by : (A) Law of Mass Action (B) The amount of solvent used (C) Distribution Law (D) The amount of solute used
(16)	The volume occupied by 1.4 g of N_2 at S.T.P. is : (A) 2.24 dm^3 (B) 22.4 dm^3 (C) 1.12 dm^3 (D) 112 cm^3
(17)	27g of Al will react completely with how much mass of O_2 to produce Al_2O_3 : (A) 8 g Oxygen (B) 16 g Oxygen (C) 32 g Oxygen (D) 24 g Oxygen

Roll No.	1113 - 21000	Session (2015 -17) to (2018 - 20)	Inter (Part - I)
Chemistry (Subjective)	Inter - A -2019	Time 2 : 40 Hours Marks : 68	(New Pattern) / Group Ist

Note : It is compulsory to attempt any (8 - 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part - II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary.

Part - I

22 x 2 = 44

Q.No.2

(i) Define Relative Atomic Mass. Also give two examples.

(ii) How can efficiency of a reaction is expressed? Write down its formula.

(iii) Differentiate between Molecule and Molecular Ion.

(iv) Write down any four features of Ideal Solvent.

(v) State Partition Law.

(vi) Prove that $d = \frac{PM}{RT}$

(vii) Calculate the value of R in S.I. Units.

(viii) Define Plasma. Also give its one application.

(ix) Write down the S.I. Units of ' a ' and ' b ' in van der Waal's Equation.

(x) Differentiate between Ideal and Non - Ideal Solutions.

(xi) One Molal Solution of Urea in water is dilute as compared to one molar solution of Urea, but the number of particles of the solute is same. Justify it.

(xii) Define Mole Fraction. Also write down its formula.

Q.No.3

(i) Evaporation causes cooling. Justify.

(ii) Boiling needs a constant supply of heat. Justify.

(iii) How Earthenware vessels keep water cool ?

(iv) Vacuum Distillation can be used to avoid decomposition of a sensitive liquid. Justify.

(v) Why is it necessary to decrease the pressure in the discharge tube to get the Cathode Rays?

(vi) Why the Positive Rays are also called Canal Rays?

(vii) Whichever gas is used in the discharge tube, the nature of the Cathode Rays remain the same, why?

(viii) Differentiate between Slow Moving Neutrons and Fast Moving Neutrons.

(ix) Why Solubility of Glucose in water in Increased by increasing the temperature?

(x) Define pH and pOH.

(xi) Give two properties of Enzyme.

(xii) Differentiate between Average and Instantaneous Rate.

Q.No.4

(i) Define Polar Bond. Give formulas of two diatomic molecules which have polar bonds.

(ii) Define Coordinate Covalent Bond. Draw Coordinate Covalent Bond between NH_3 and BF_3 molecules.

(iii) Why Molecular Orbital Theory is superior to Valence Bond Theory?

(iv) The Dipole Moment of CO_2 Molecule is zero but that of SO_2 molecule is greater than zero, justify.

(v) Define System and Surrounding with reference to Thermochemistry.

(vi) Define Enthalpy of Neutralization. Write thermochemical equation for Enthalpy of Neutralization between Strong Acid and Strong Base.

(vii) Show that Oxidation Number of Cr in K_2CrO_4 is + 6.

(viii) Write the reactions : Electrolysis of Fused NaCl with related Oxidation and Reduction Reactions at Anode and Cathode respectively.

(ix) SHE acts as Anode when connected to Cu Electrode but acts as Cathode when connected to Zn Electrode, explain briefly.

Part - II

Q.No.5 (a) Define Actual Yield. Why is Actual Yield mostly less than Theoretical Yield? Write down formula of Percentage Yield. (4)

(b) Give any four characteristics of Covalent Solids. (4)

Q.No.6 (a) One Mole of Methane Gas is maintained at 300 K. Its volume is 250 cm^3. Calculate the pressure exerted by the Gas. (4)

(b) Derive the equation for the radius of nth Orbit of Hydrogen Atom using Bohr's Model. (4)

Q.No.7 (a) Define Atomic Orbital Hybridization. Explain Sp^2 - Hybridization giving example of BF_3. (4)

(b) Differentiate between Spontaneous and Non - Spontaneous processes with examples. (4)

Q.No.8 (a) Calculate the pH of a Buffer Solution in which 0.11 molar CH_3COONa and 0.09 Molar Acetic Acid solutions are present. Ka for CH_3COOH is 1.85×10^{-5} (4)

(b) Write two factors which affect the rate of Reaction. (4)

Q.No.9 (a) Define Hydrolysis. Explain it with two examples. (4)

(b) Write any four applications of Electrochemical Series. (4)

Chemistry	(A)	L.K.No. 1114	Paper Code No. 6482
Paper I	(Objective Type)	Inter –A- 2019	(New Pattern)
Time :	20 Minutes	Inter (Part - I)	(Group 2nd)
Marks :	17	Session (2015 -17) to (2018 – 20)	

Note : Four possible choices A , B , C ,D to each question are given. Which choice is correct fill that circle in front of that Question No. Use Marker or Pen to fill the circles. Cutting or filling two or more circles will result in Zero Mark in that Question.

Q.No.1 (1)	The volume occupied by 1.4 g of N_2 at S.T.P. is : (A) 2.24 dm^3 (B) 22.4 dm^3 (C) 1.12 dm^3 (D) 112 cm^3
(2)	The mass of one mole of electrons is : (A) 1.008 mg (B) 0.55 mg (C) 0.184 mg (D) 1.673 mg
(3)	The comparative rates at which the solutes move in paper chromatography depends on : (A) The size of paper (B) R_f values of Solutes (C) Temperature of the Experiment (D) Size of the chromatographic tank used
(4)	A real gas obeying van der Waals equation will resemble ideal gas if : (A) Both 'a' and 'b' are large (B) Both 'a' and 'b' are small (C) 'a' is small and 'b' is large (D) 'a' is large and 'b' is small
(5)	The molar volume of CO_2 is maximum at : (A) S.T.P (B) 127°C and 1 atm (C) 0°C and 2 atm (D) 273°C and 2 atm
(6)	Acetone and Chloroform are soluble in each other due to : (A) Intermolecular Hydrogen Bonding (B) Ion – Dipole Interaction (C) Instantaneous Dipole Forces (D) London Dispersion Forces
(7)	Ionic Solids are characterized by : (A) Low Melting Points (B) Good Conductivity in Solid State (C) High Vapour Pressures (D) Solubility in Polar Solvents
(8)	Splitting of Spectral Lines when atoms are subjected to strong electric field is called : (A) Zeeman Effect (B) Stark Effect (C) Photoelectric Effect (D) Compton Effect
(9)	Quantum Number values for 2p Orbitals are : (A) $n = 2, \ell = 1$ (B) $n = 1, \ell = 2$ (C) $n = 1, \ell = 0$ (D) $n = 2, \ell = 0$
(10)	Which of the following Hydrogen Halides has the highest percentage of Ionic character : (A) HCl (B) HBr (C) HF (D) HI
(11)	Which of the following Molecules has Zero Dipole Moment : (A) NH_3 (B) $CHCl_3$ (C) H_2O (D) BF_3
(12)	For a given gaseous process, the heat changes at constant pressure (q_p) and at constant volume (q_v) are related to each other as : (A) $q_v = q_p$ (B) $q_p < q_v$ (C) $q_p > q_v$ (D) $q_p = q_v / 2$
(13)	The pH of 10^{-3} mol dm^{-3} of an aqueous solution of H_2SO_4 is : (A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5
(14)	The Molal Boiling Point Constant is the ratio of the elevation in boiling point to : (A) Molarity (B) Molality (C) Mole Fraction of Solvent (D) Mole Fraction of Solute
(15)	A solution of glucose is 10% w / v. The volume in which its one gram mole is dissolved will be : (A) 1 dm^3 (B) 1.8 dm^3 (C) 200 cm^3 (D) 900 cm^3
(16)	If the Salt Bridge is not used between two half cells, then the voltage : (A) Decreases Rapidly (B) Decreases Slowly (C) Does not change (D) Drops to zero
(17)	If the rate equation of a reaction $2A + B \longrightarrow$ products is , rate = $k[A]^2[B]$, and A is present in large excess, then order of reaction is : (A) 1 (B) 2 (C) 3 (D) None of these

Roll No.	1114 - 32000	Session (2015 -17) to (2018 – 20)	Inter (Part -I)
Chemistry (Subjective)	Inter – A -2019	Time 2 : 40 Hours Marks : 68	(New Pattern) / Group 2nd

Note : It is compulsory to attempt any (8 – 8) Parts each from Q.No. 2, Q.No.3 and attempt any (6) Parts from Q.No.4. Attempt any (3) Questions from Part – II. Write same Question No. and its Part No. as given in the Question Paper.

Make Diagram where necessary. | Part - I | | 22 x 2 = 44

Q.No.2

(i) Many Chemical Reactions taking place in our surrounding involve the limiting reactants. Justify it by two examples.

(ii) How many Atoms are present in 0 . 1 g pure Na – 23 ?

(iii) Why the Atomic Mass of Neon Gas is in Fraction?

(iv) What is Solvent Extraction? What is its importance?

(v) How Crystals are dried by Filter Paper ? What is disadvantage of this method?

(vi) Why lighter gases diffuses through air rapidly than heavier gases?

(vii) Derive Charles's Law from Kinetic Molecular Theory of Gases.

(viii) Convert - 40°C to Fahrenheit Scale.

(ix) Define Plasma. Why it is neutral?

(x) What is meant by Molar and Molal Solutions?

(xi) Mention two applications of Depression in freezing point.

(xii) Define Hydration and Hydrolysis.

Q.No.3

(i) How Electrical Conductivity of Metal decreases by increase in temperature?

(ii) Boiling need a constant supply of Heat. Justify.

(iii) Justify that Diamond is non conductor of electricity.

(iv) Ionic Solids are highly brittle , why?

(v) Why is it necessary to decrease the pressure of gas in the discharge tube?

(vi) Justify that e / m value is maximum for Hydrogen Gas.

(vii) Give importance of Principal Quantum Number.

(viii) Throw light on the factor $\frac{1}{273}$ in Charles's Law.

(ix) Define pH and pOH . How are they related with pK_w?

(x) Explain the effect of change in temperature on K_w .

(xi) Define Catalytic Poisloning with an example.

(xii) Enzymes are always specific in action. Explain.

Q.No.4

(i) Define Electronegativity. State the element with highest value of Electronegativity.

(ii) Describe sp^2 – Hybridization. Mention a Molecule in which sp^2 – Hybridization is applied.

(iii) Ionization Energy is an index to the metallic character justify.

(iv) Difference of Electronegativity values of the bonded atoms is an index to the polar nature of Covalent Bond justify.

(v) Define System and Surrounding.

(vi) Describe Non – Spontaneous Process. Give an example.

(vii) Give two applications of Fuel Cell.

(viii) How Electrochemical series help to predict the feasibility of chemical reaction ?

(ix) Write down reactions at Anode and Cathode during Electrolysis of Aqueous Solution of $NaNO_3$.

(Part – II)

Q.No.5 (a) Define Limiting Reactant. How does it control the quantity of the product formed ? Explain with two examples. (4)

(b) Explain the following properties of Solids :
(i) Allotropy (ii) Habit of a Crystal (iii) Cleavage Plane (iv) Transition Temperature (4)

Q.No.6 (a) Calculate the Density of CH_4 (g) at 0°C and 1 Atmospheric Pressure. (4)

(b) Write the main points of Bohr's Atomic Model. (4)

Q.No.7 (a) How does Molecular Orbital Theory explain the paramagnetic character of O_2 . (4)

(b) State First Law of Thermodynamics. Also prove $q_p = \Delta H$ (4)

Q.No.8 (a) The Solubility of PbF_2 at 25°C is 0 . 64 g / dm^3 . Calculate K_{sp} of PbF_2 . Molecular Mass of PbF_2 = 245 . 2 g mol^{-1} (4)

(b) Explain the effect of Surface Area and light on the rate of reaction. (4)

Q.No.9 (a) Define Elevation of Boiling Point. How is it measured experimentally? (4)

(b) Discuss Discharging and Recharging of Lead Accumulator along with reactions occuring at electrodes. (4)

Chemistry | A | L.K.No.813 | Paper Code No. 6481

Paper I (Objective Type) | (Inter-A-2018) | New Pattern

Time : 20 Minutes | Inter (Part - I) | Group Ist

Marks : 17 | Session (2015 - 17) to (2017 - 19)

Bahawalpur Board-2018

Note : Four possible choices A , B , C , D to each question are given. Which choice is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Q.No.1 (1)	The Mass of One Mole of Electrons is : (A) 1 • 008 mg (B) 0 • 55 mg (C) 0 • 184 mg (D) 1 • 673 mg
(2)	A ring has 6 • 0 g of diamond (c) in it. Calculate the number of atoms of Carbon in it : (A) $6 \cdot 02 \times 10^{23}$ (B) $3 \cdot 01 \times 10^{23}$ (C) $9 \cdot 03 \times 10^{23}$ (D) $1 \cdot 8 \times 10^{24}$
(3)	Solvent Extraction is an equilibrium process and it is controlled by : (A) Law of Mass Action (B) The Amount of Solvent used (C) The Amount of Solute (D) Distribution Law
(4)	The Molar Volume of CO_2 is maximum at : (A) STP (B) $127^{\circ}C$ and 1 atm (C) $0^{\circ}C$ and 2 atm (D) $273^{\circ}C$ and 2 atm
(5)	When water freezes at $0^{\circ}C$, its Density decreases due to : (A) Cubic Structure of Ice (B) Empty spaces present in the structure of Ice (C) Change of Bond Lengths (D) Change of Bond Angles
(6)	Which of the given is a Pseudo Solid : (A) CaF_2 (B) Glass (C) NaCI (D) KBr
(7)	The Velocity of Photon is : (A) Independent of its Wavelength (B) Depends on its Wavelength (C) Equal to Square of its Amplitude (D) Depends on its Source
(8)	When 6d Orbital is complete, the entering electron goes into (A) 7 f (B) 7 s (C) 7 p (D) 7 d
(9)	Octet Rule is not followed in : (A) CH_4 (B) CF_4 (C) CCI_4 (D) PCI_5
(10)	Which one of the following Hydrogen Halide has the highest percentage of Ionic character : (A) HCI (B) HBr (C) HF (D) HI
(11)	For the reaction $NaOH + HCI \longrightarrow NaCI + H_2O$ the change in enthalpy is called : (A) Heat of Reaction (B) Heat of Formation (C) Heat of Neutralization (D) Heat of Combustion
(12)	The pH of Milk of Magnesia is : (A) 10 . 5 (B) 3 . 5 (C) 8 . 5 (D) 11 . 1
(13)	The solubility product of AgCI is $2 \cdot 0 \times 10^{-10} mol^2 dm^{-6}$. The maximum concentration of Ag^+ Ions in the solution is : (A) $2 \cdot 0 \times 10^{-10}$ mol dm^{-3} (B) $1 \cdot 41 \times 10^{-5}$ mol dm^{-3} (C) $1 \cdot 0 \times 10^{-10}$ mol dm^{-3} (D) $4 \cdot 0 \times 10^{-20}$ mol dm^{-3}
(14)	A solution of Glucose is 10 % w/v . The volume in which 1 g mole of it is dissolved, will be : (A) 1 dm^3 (B) 1 • 8 dm^3 (C) 200 cm^3 (D) 900 cm^3
(15)	The Number of Moles of Solute per kg of Solvent is called : (A) Molality (B) Molarity (C) Mole Fraction (D) Normality
(16)	The Cathodic Reaction in the electrolysis of dil H_2SO_2 with Pt electrodes is : (A) Reduction (B) Oxidation (C) Both Oxidation and Reduction (D) Neither Oxidation or Reduction
(17)	A substance which makes the Catalyst more effective is called : (A) Inhibitor (B) Retarder (C) Promotor (D) Autocatalyst

Roll No.	813 - Jacco	New Pattern	Inter (Part - I) / Group Ist
Chemistry (Subjective)	Inter-A-2018	Time : 2:40 Hrs Marks = 68	Session (2015 - 17) to (2017 - 19)

Note : It is compulsory to attempt any (8 - 8) parts each from Q.No.2 and Q.No.3 and attempt any (6) parts from Q. No.4 . Attempt any (03) questions from Part II Write same Question No. and its Part No. as given in the question paper.

Make Diagram where necessary. **Part - I** **Bahawalpur Board-2018** 22 x 2 = 44

Q.No.2 (i) Define Mass Spectrum.

(ii) Write down only steps to determine Limiting Reactant.

(iii) Calculate Percentage of Nitrogen in Urea. ($H_2N - \overset{O}{\overset{\|}{C}} - NH_2$)

(iv) Mention only steps involved in complete quantitative determination.

(v) Write down any two uses of Chromatography.

(vi) Why Liquids are less common than Solids and Gases?

(vii) Define Diffusion and Effusion.

(viii) Why is the Critical Temperature of Water higher than Argon?

(ix) Define Reversible Reaction. Give one example.

(x) State Law of Mass Action.

(xi) What is the effect of Catalyst on Equilibrium Position?

(xii) Write down any two uses of Buffer Solutions.

Q.No.3 (i) Ice Floats on Water. Give reason.

(ii) Describe the importance of Vacuum Distillation.

(iii) Define Transition Temperature with one example.

(iv) Ionic Crystals are highly brittle, why?

(v) Differentiate between Bonding and Antibonding Molecular Orbitals.

(vi) Define Electronegativity and Electron Affinity of an Atom.

(vii) Why is size of Anion greater than Parent Atom?

(viii) Why the Atomic Radii of the Atoms can not be determined precisely?

(ix) Burning of a Candle is a Spontaneous Process. Justify.

(x) Define Standard Enthalpy of Atomization with an example.

(xi) Differentiate between Ideal and Non - Ideal Solution.

(xii) Aqueous Solution of $CuSO_4$ is Acidic in Nature. Justify it.

Q.No.4 (i) Write Electronic Configuration of Na = 11 and Cr = 24

(ii) Explain Hund's Rule by giving an example.

(iii) Explain Atomic Emission Spectrum.

(iv) Write down two equations when slow moving Neutrons hit the Cu Metal.

(v) How is the Surface Area affects the rate of Reaction?

(vi) Describe Half Life Method to determine order of reaction.

(vii) SHE acts as Anode when connected with Cu - Electrode but as Cathode with Zn - Electrode, give reason.

(viii) How Electrochemical Series helps to predict the feasibility of a chemical reaction ? Give an example.

(ix) What is Anodized Aluminium ? How is it prepared ?

Part - II

Q.No.5 (a) Ethylene Glycol is used as Automobile Antifreeze. It has 38.7% Carbon, 9.7% Hydrogen and 51.6% Oxygen. Its Molar Mass is 62.1 g mol^{-1}. Determine its Empirical Formula. (4)

(b) What are Molecular Solids ? Write their three properties. (4)

Q.No.6 (a) Define Joule Thomson Effect and write Linde's Method for Liquefaction of Gases. (4)

(b) Define Quantum Numbers and explain Principal Quantum Number. (4)

Q.No.7 (a) Define Atomic Orbital Hybridization and describe the structure of Ethyne by it. (4)

(b) Define Enthalpy. How is it determined with help of Bomb's Calorimeter. (4)

Q.No.8 (a) Explain the following applications of Equilibrium Constant. Give examples. (4)

(i) Direction of Reaction (ii) Extent of Reaction.

(b) Balance the following equation by Ion - Electron Method :

$$CN^- + MnO_4^{1-} \longrightarrow CNO^- + MnO_2 \quad \text{(Basic Media)}.$$ (4)

Q.No.9 (a) Calculate the Mole Fraction of each component in a solution having 92.0 g of Ethyl Alcohol, 96.0 g of Methyl Alcohol and 90.0 g of Water. (4)

(b) Explain Energy of Activation. (4)

Chemistry | D | L.K.No.814 | Paper Code No. 5488

Paper I (Objective Type) | (Inter-A-2018) | New Pattern

Time : 20 Minutes | Inter (Part - I) | Group 2nd

Marks : 17 | Session (2015 - 17) to (2017 - 19)

Bahawalpur Board-2018

Note : Four possible choices A , B , C , D to each question are given. Which choice is correct , fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question.

Q.No.1 (1)	27 g of Al will react completely with how much mass of O_2 to produce Al_2O_3 : (A) 8 g of Oxygen (B) 16 g of Oxygen (C) 32 g of Oxygen (D) 24 g of Oxygen
(2)	Pressure remaining constant at which temperature the volume of a gas will become twice of what it is at 0^oC : (A) 546^oC (B) 200^oC (C) 546 K (D) 273 K
(3)	Solvent Extraction method is particularly useful technique for separation when the product to be separated is : (A) Non - Volatile or Thermally Unstable (B) Volatile or Thermally Stable (C) Non - Volatile or Thermally Stable (D) Volatile or Thermally Unstable
(4)	Isotopes differ in : (A) Properties which depend upon mass (B) Arrangement of Electrons in Orbitals (C) Chemical Properties (D) The extent to which they may be affected in electromagnetic field
(5)	If Absolute Temperature of a Gas is doubled and the pressure is reduced to one half, the volume of the gas will : (A) Remains unchanged (B) Increase four times (C) Reduce to 1/4 (D) Be doubled
(6)	When 6d Orbital is complete, the entering electron goes into : (A) 7 f (B) 7 s (C) 7 p (D) 7 d
(7)	Ionic Solids are characterized by : (A) Low Melting Points (B) Good conductivity in solid state (C) High Vapour Pressure (D) Solubility in Polar Solvents
(8)	When water freezes at 0^oC, its density decreases due to : (A) Cubic Structure of Ice (B) Empty Spaces present in the structure of Ice (C) Change of Bond Lengths (D) Change of Bond Angles
(9)	In the ground state of an atom, the electron is present : (A) In the Nucleus (B) In the Second Shell (C) Nearest to the Nucleus (D) Farthest from the Nucleus
(10)	For a given process, the heat changes at constant pressure (q_p) and at constant volume (q_v) are related to each other as : (A) $q_p = q_v$ (B) $q_p < q_v$ (C) $q_p > q_v$ (D) $q_p = q_v/2$
(11)	Which of the following species has un - paired electrons in the anti - bonding molecular orbitals : (A) O_2^{-2} (B) N_2^{-2} (C) B_2 (D) F_2
(12)	Which of the following Molecules has zero Dipole Moment : (A) NH_3 (B) $CHCl_3$ (C) H_2O (D) BF_3
(13)	The pH of 10^{-3} mol dm^{-3} of an aqueous solution of H_2SO_4 is : (A) 3 • 0 (B) 2 • 7 (C) 2 • 0 (D) 1 • 5
(14)	The Cathodic Reaction in the Electrolysis of dil H_2SO_4 with Pt electrodes is : (A) Reduction (B) Oxidation (C) Both Oxidation and Reduction (D) Neither Oxidation or Reduction
(15)	The molal boiling point constant is the ratio of the elevation in boiling point to : (A) Molarity (B) Molality (C) Mole Fraction of Solvent (D) Mole Fraction of Solute
(16)	For which system, does the equilibrium constant K_c has units (Concentration)$^{-1}$: (A) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ (B) $H_2 + I_2 \rightleftharpoons 2HI$ (C) $2NO_2 \rightleftharpoons N_2O_4$ (D) $2HF \rightleftharpoons H_2 + F_2$
(17)	The rate of reaction : (A) Increases as the reaction proceeds (B) Decreases as the reaction proceeds (C) Remains the same as the reaction proceeds (D) May decrease or increase as the reaction proceeds

Roll No.	814 - 18000	New Pattern	Inter (Part - I) / Group 2nd
Chemistry (Subjective)	Inter-A-2018	Time : 2:40 Hrs Marks = 68	Session (2015 - 17) to (2017 - 19)

Note: It is compulsory to attempt any (8 - 8) parts each from Q.No.2 and Q.No.3 and attempt any (6) parts from Q. No.4. Attempt any (03) questions from Part II Write same Question No. and its Part No. as given in the question paper.

Make Diagram where necessary.

Part - I Bahawalpur Board-2018 (22 x 2 = 44)

Q.No.2 (i) What is Molecular Ion? How is it formed?

(ii) Why Actual Yield is usually less than Theoretical Yield?

(iii) What is Avogadro's Number? Give its numerical value.

(iv) How undesirable Colour can be removed from a Crude Crystalline Product?

(v) What is the difference between Adsorption Chromatography and Partition Chromatography?

(vi) Write two characteristics of Plasma.

(vii) State Avogadro's Law and give an example.

(viii) SO_2 is comparatively non-ideal at 273 K but behaves ideally at $327^{\circ}C$, why?

(ix) What are Irreversible Reactions? Give an example.

(x) How does a Catalyst affect the equilibrium position of a reversible reaction?

(xi) Define pH of a Solution. Give its mathematical formula.

(xii) What are Basic Buffers? How are they prepared?

Q.No.3 (i) Ice Floats on Water. Give reason.

(ii) The Crystals showing Isomorphism mostly have the same atomic ratio, give reason.

(iii) Earthenware Vessels keep water cool, give reason.

(iv) Heat of Sublimation of Iodine is very high, give reason.

(v) Ionic Bonds are stronger than Covalent Bonds, give reason.

(vi) Helium shows diamagnetic behaviour, give reason.

(vii) Bond Distance is the Compromise Distance between two atoms, justify.

(viii) How Dipole Moment is helpful to determine the Molecular Structure?

(ix) Define State Function and write two properties that are State Function.

(x) Define Standard Enthalpy of Combustion and Standard Enthalpy of Solution.

(xi) Calculate the Molality of 8% w/w NaCl Solution.

(xii) State Roult's Law.

Q.No.4 (i) Differentiate between Atomic Emission Spectrum and Atomic Absorption Spectrum.

(ii) Why are the Positive Rays called "Canal Rays"? Give reason.

(iii) Why the e/m value of Positive Rays obtained from H_2 Gas is 1836 times lesser than that of Cathode Rays?

(iv) Differentiate between Zeeman Effect and Stark Effect.

(v) Why is the Porous Plate or a Salt Bridge not required in Lead Storage Accumulator?

(vi) How is the Standard Oxidation Potential of Zn is + 0.76 V but the Reduction Potential is − 0.76 V?

(vii) Why can Na and K displace H_2 from Acids but Pt, Pd and Cu can not displace?

(viii) How Electrochemical Series helps to predict the feasibility of a chemical reaction? Give an example.

(ix) Justify that a Catalyst is specific for a chemical reaction using HCOOH as reactant producing different products.

Part - II

Q.No.5 (a) A well known Ideal Gas is enclosed in a container having volume 500 cm^3 at S.T.P. Its mass comes out to be 0.72 g. What is the Molar Mass of this Gas? (4)

(b) Define Liquid Crystal. Give four applications of Liquid Crystals. (4)

Q.No.6 (a) Write four applications of Dalton's Law of Partial Pressure. (4)

(b) Derive Radius of Revolving Electron in the nth Orbit of Hydrogen (H) Atom. (4)

Q.No.7 (a) Define Ionization Energy. Write down factors influencing Ionization Energy. (4)

(b) State Ist Law of Thermodynamics. Prove that $\Delta H = q_p$ (4)

Q.No.8 (a) Define pH and pOH. How are they related with pK_w? (4)

(b) Define Electrochemical Series. Give its three applications. (4)

Q.No.9 (a) Pure Benzene has Vapour Pressure of 122.0 torr at $32^{\circ}C$. When 20 g of a non-volatile solute were dissolved in 300 g of Benzene, a vapour pressure of 120 torr was observed. Calculate the Molecular Mass of the solute. The Molecular Mass of Benzene being 78.1. (4)

(b) How does Arrhenius Equation help us to calculate the [illegible]