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.

Bwp-11-1-23

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
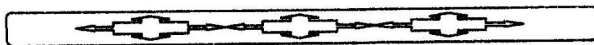
Roll No.	(Group Ist)	1011-18000	Inter (Part – I)	Session (2020 – 22) to (2022 – 24)

Chemistry (Subjective) | Inter (1st – 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	BWP-11-1-23	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

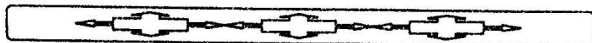| Q.No.5	(a)	Define Stoichiometry. Give its assumptions. Mention two important laws which help to perform the Stoichiometric calculation. 1 + 2 + 1 =	(4)
	(b)	Calculate the Mass of $1 \, dm^3$ of NH_3 Gas at $30^{o}C$ and 1000 mm Hg pressure, considering that NH_3 is behaving ideally.	(4)
Q.No.6	(a)	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)

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.

BWP-11-2-23

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) $q_p = \dfrac{q_v}{2}$
(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

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 | BWP-11-2-23 | 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 1st 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)