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^{o} 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^{o}C and 5 . 0 atm (B) -10^{o}C and 2 . 0 atm (C) 100^{o}C and 2 . 0 atm (D) 0^{o}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 | 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 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)