Paper Code Number: 2481	2024 (1st-A) INTERMEDIATE PART-I (11th Class)	Roll No: MTN-1-24
CHEMISTRY PAPER-I GROUP-I		
TIME ALLOWED: 20 Minutes	OBJECTIVE	MAXIMUM MARKS: 17

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	The largest number of molecules are present in:	3.6g of H_2O	4.8g of C_2H_5OH	2.8g of CO	5.4g to N_2O_5
2	The number of isotopes of nickel are:	1	3	5	7
3	Iodine dissolved in water in presence of KI is due to formation of given species:	I_2	I'	I_4^{-1}	I_3^{-1}
4	The comparative rates at which solute moves in paper chromatography depends on:	Size of paper	R_f value of solute	Temperature of experiment	Size of chromatographic tank
5	Which of given will have highest rate of diffusion?	O_2	CO_2	NH_3	SO_2
6	Molar volume of CO_2 is maximum at:	S.T.P	127^oC and 1 atm	0^oC and 2 atm	273^oC and 2 atm
7	At Murree hills water boils at:	98^oC	100^oC	0^oC	50^oC
8	The molecules of CO_2 in dry ice form the:	Ionic crystals	Covalent crystals	Molecular crystals	Any type of crystals
9	Orbitals having same energy are called:	Hybrid orbitals	Valence orbitals	d-orbitals	Degenerate orbitals
10	The nature of positive rays depends upon:	The nature of electrodes	Nature of discharge tube	The nature of residual gas	All of these
11	Which of given species has unpaired electrons in anti-bonding molecular orbitals?	N_2^{-2}	O_2^{+2}	B_2	F_2
12	The bond order of N_2 molecule according to Molecular Orbital Theory is:	Zero	01	02	03
13	For a given process the heat changes at constant pressure(q_p) and at constant volume(q_v) are related to each other as:	$q_p = q_v$	$q_p < q_v$	$q_p > q_v$	$q_p = \frac{q_v}{2}$
14	pH of pure water is:	7.0	5.4	4.4	8.0
15	Molarity of pure water is:	1	18	55.5	6
16	If salt bridge is not used between two half cells then the voltage:	Decreases rapidly	Decreases slowly	Does not change	Drops to zero
17	The unit of rate constant is same as that of rate of reaction in:	First order reaction	Second order reaction	Zero order reaction	Third order reaction

2024 (1st-A)

INTERMEDIATE PART-I (11th Class) | **Roll No:** MTM-1-24

CHEMISTRY PAPER-I GROUP-I

TIME ALLOWED: 2.40 Hours | **SUBJECTIVE** | **MAXIMUM MARKS: 68**

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. **8 × 2 = 16**

(i)	Differentiate between ion and molecular ion.
(ii)	What are macromolecules? Give an example.
(iii)	What is justification of two strong peaks in the mass spectrum for bromine while for iodine only one peak at 127 a.m.u is indicated?
(iv)	Define sublimation. Give two examples.
(v)	Give two applications of paper chromatography.
(vi)	What do you mean by distribution coefficient?
(vii)	What is absolute zero?
(viii)	Give two conditions when gases deviate from ideal behaviour.
(ix)	Joule Thomson effect produces cooling. How?
(x)	How can direction of a reversible reaction be predicted by K_C ?
(xi)	Define Buffer capacity.
(xii)	Give two applications of solubility product.

3. Attempt any eight parts. **8 × 2 = 16**

(i)	Why boiling point of H_2O is greater than HF?
(ii)	Evaporation causes cooling. Justify.
(iii)	What is habit of crystal? What is the effect of impurity on shape of crystal?
(iv)	Define Allotropy. Write names of two elements showing allotropy.
(v)	Why positive rays are called canal rays?
(vi)	How dual nature of matter was got verified by Davison and Germer experimentally?
(vii)	How slow neutrons are used to carry out radioactive reactions by emitting gamma radiations?
(viii)	Cathode rays travel in a straight line. Justify with diagram.
(ix)	What is the effect of temperature on phenol-water system?
(x)	Why $A\ell C\ell_3$ and $CuSO_4$ give acidic solution in water? Give chemical equation of each.
(xi)	What is dilatometric and refractrometric method for the determination of concentration of reactant?
(xii)	What is activation of catalyst?

4. Attempt any six parts. **6 × 2 = 12**

(i)	What is dipole moment? Give its various units.
(ii)	What is octet rule? Give two examples of compounds which deviate from it?
(iii)	Write the Lewis structures for (i) CS_2 (ii) HCN
(iv)	How do you compare the bond strengths of polar and non-polar molecules?
(v)	Justify that the burning of a candle is a spontaneous process.
(vi)	Define state and state functions with examples.
(vii)	Differentiate between heat and temperature.
(viii)	A salt bridge maintains the electrical neutrality in the cell. Why?
(ix)	Calculate the oxidation number of "S" in $Cr_2(SO_4)_3$.

SECTION-II

NOTE: Attempt any three questions. **3 × 8 = 24**

5.(a)	Define and differentiate between actual and theoretical yield. Explain why actual yield is usually less than theoretical yield.	1+1+2=4
(b)	Describe with the help of diagram the monometric method for the measurement of vapour pressure.	3+1=4
6.(a)	$250cm^3$ of the sample of hydrogen effuses four times as rapidly as $250cm^3$ of a unknown gas. Calculate the molar mass of unknown gas.	4
(b)	State and explain main points of Planck's quantum theory.	4
7.(a)	What is ionization energy? Discuss the variation of ionization energy in the periodic table.	4
(b)	The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at 25^oC. Calculate the solubility of the compound.	4
8.(a)	Explain the glass calorimetric method for the measurement of enthalpy of reaction.	4
(b)	Define standard electrode potential. Explain the measurement of electrode potential of copper.	4
9.(a)	Explain Beckmann's Method for measuring depression in freezing point.	4
(b)	Explain the effect of temperature on the rate constant of a reaction by "Arrhenius Equation".	4

Paper Code Number: 2482	2024 (1st-A) INTERMEDIATE PART-I (11th Class)	Roll No: MTN-2-24
CHEMISTRY PAPER-I GROUP-II		
TIME ALLOWED: 20 Minutes	OBJECTIVE	MAXIMUM MARKS: 17

Q.No.1 **You have four choices for each objective type question as A, B, C and D. The choice which you think is correct, fill that bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question.**

S.#	QUESTIONS	A	B	C	D
1	The number of isotopes of tin(Sn) is:	Six	Nine	Eleven	Three
2	27g of $A\ell$ will react completely with how much mass of O_2 to produce $A\ell_2O_3$?	8g of oxygen	16g of oxygen	32g of oxygen	24g of oxygen
3	A complete quantitative analysis consists of how many major steps:	Two	Five	Four	Three
4	Solvent extraction method is particularly useful technique for separation, when the product to be separated is:	Non volatile or thermally unstable	Volatile or thermally stable	Non volatile or thermally stable	Volatile or thermally unstable
5	The melting point of ice on Kelvin Scale, at 1 atmospheric pressure is:	273K	373K	0K	– 273 K
6	Equal masses of methane and oxygen are mixed in an empty container at 25^oC. The fraction of total pressure exerted by oxygen is:	$\frac{1}{9}$	$\frac{8}{9}$	$\frac{1}{3}$	$\frac{16}{17}$
7	In order to maintain the boiling point of water at 110^oC, the external pressure should be:	Between 200 torr and 760 torr	Between 760 torr and 1200 torr	765 torr	Any value of torr
8	Ionic solids are characterized by:	Low melting points	Good conductivity in solid state	High vapour pressure	Solubility in polar solvents
9	Splitting of spectral lines when atoms are subjected to strong electric field is called:	Zeeman effect	Stark effect	Compton effect	Photoelectric effect
10	Quantum number values for 2p orbitals are:	$n=2,\ \ell=1$	$n=1,\ \ell=2$	$n=1,\ \ell=0$	$n=2,\ \ell=0$
11	The most electronegative element of the periodic table is:	Chlorine	Bromine	Fluorine	Iodine
12	Which molecule shows linear molecular geometry?	CH_4	$A\ell C\ell_3$	H_2O	$BeC\ell_2$
13	Calorie is equivalent to:	0.4184 J	41.8 J	4.18 J	418.4 J
14	The solubility product of $AgC\ell$ is $2.0\times10^{-10}\ mole^2dm^{-6}$. The maximum concentration of Ag^+ ions in the solution is:	2.0×10^{-10} $mole\,dm^{-3}$	1.41×10^{-5} $mole\,dm^{-3}$	1.0×10^{-10} $mole\,dm^{-3}$	4.0×10^{-20} $mole\,dm^{-3}$
15	A solution of glucose is 10% w/v. The volume in which 1g mole of it is dissolved will be:	$1.8\,dm^3$	$1\,dm^3$	$200\,cm^3$	$900\,cm^3$
16	If the salt bridge is not used between two half cells, the voltage:	Decreases rapidly	Decreases slowly	Does not change	Drops to zero
17	With increase of 10^oC temperature, the rate of reaction doubles. This increase in rate of reaction is due to:	Decrease in activation energy of reaction	Decrease in the number of collisions between reactant molecules	Increase in effective collisions	Increase in activation energy of reactants

CHEMISTRY PAPER-I GROUP-II		MTN-2-24
TIME ALLOWED: 2.40 Hours	SUBJECTIVE	MAXIMUM MARKS: 68

NOTE: Write same question number and its parts number on answer book, as given in the question paper.

SECTION-I

2. Attempt any eight parts. $8 \times 2 = 16$

(i)	What is the principle of mass spectrometry?
(ii)	$23g$ of sodium and $238g$ of uranium have equal number of atoms in them. Give the reason.
(iii)	Define gram atom. Give two examples.
(iv)	What is R_f value? Give its formula.
(v)	Write down the four main characteristics of the solvent used for crystallization.
(vi)	What is solvent extraction? Give its importance.
(vii)	Gases deviate more significantly at high pressure and low temperature. Why?
(viii)	How do you differentiate between effusion and diffusion of gases?
(ix)	Derive Graham's law of diffusion from kinetic molecular theory of gases.
(x)	Give two applications of common ion effect.
(xi)	Why do the equilibrium constant value has its units for some of the reversible reactions but has no units for some other reactions?
(xii)	How can we prepare acidic buffers? Give an example.

3. Attempt any eight parts. $8 \times 2 = 16$

(i)	Why water is liquid but hydrogen sulphide is gas at room temperature?
(ii)	How dynamic equilibrium is established in a close vessel?
(iii)	Why molar heat of vapourization is greater than molar heat of fusion?
(iv)	Why liquid crystals are used as temperature sensors?
(v)	Write reason for production of positive rays.
(vi)	How will you justify that cathode rays move in straight line?
(vii)	Write any two postulates of Plank's Quantum Theory.
(viii)	Calculate wave number of second spectral line of Balmer series.
(ix)	$NaCl$ and KNO_3 are used to lower the melting point of ice. Why?
(x)	Why non-ideal solutions do not obey Raoult's law?
(xi)	Differentiate between rate of reaction and rate constant of a reaction.
(xii)	What is heterogenous catalysis? Give an example.

4. Attempt any six parts. $6 \times 2 = 12$

(i)	Impure copper can be purified by electrolytic process. Explain by giving reason.
(ii)	Calculate the oxidation number of underlined elements $\underline{Cr}_2(SO_4)_3$; $Na_2\underline{C}O_3$
(iii)	What is Thermochemistry? Give examples.
(iv)	Define enthalpy of reaction. Give example.
(v)	In case of liquids and solids system $\Delta H \approx \Delta E$. Explain.
(vi)	Bond distance is the compromise distance between two atoms. Explain with reason.
(vii)	The melting points of electrovalent compounds are higher than covalent compounds. Explain with reason.
(viii)	There is no bond in chemistry with 100% ionic character. Explain.
(ix)	The atomic radius cannot be measured precisely. Explain with reason.

SECTION-II

NOTE: Attempt any three questions. $3 \times 8 = 24$

5.(a)	Define stoichiometry. Write two assumptions of stoichiometry. Give example.	4
(b)	Define boiling point. Explain effect of external pressure on boiling point.	4
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 behaving ideally.	4
(b)	Differentiate between atomic emission and atomic absorption spectrum with diagram.	4
7.(a)	What is paramagnetic character? Give the reason for paramagnetic character of oxygen (O_2) through orbital picture.	4
(b)	The solubility of CaF_2 in water at 25^oC is found to be $2.05 \times 10^{-4}\ mol\ dm^{-3}$. What is the value of K_{SP} at this temperature?	4
8.(a)	Explain construction and working of Bomb calorimeter. Write also formula to calculate q.	3+1=4
(b)	Define electrochemical series. Write its any two applications.	1+3=4
9.(a)	What do you mean by elevation of boiling point? Explain Landsberger's method for its measurement.	4
(b)	Discuss Half Life Method and method of large excess to find order of a reaction.	2+2=4