Paper Code Number: 2488	2023 (1st-A) INTERMEDIATE PART-I (11th Class)	Roll No: _____
CHEMISTRY PAPER-I	GROUP-II MTN-11-2523	
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	Quantum number values for 2p orbitals are:	$n = 2, \ell = 0$	$n = 1, \ell = 2$	$n = 1, \ell = 0$	$n = 2, \ell = 1$
2	The number of bonds in nitrogen molecule is:	One σ and one π	One σ and two π	Three sigma only	Two σ and one π
3	The change in heat energy of a chemical reaction at constant temperature and pressure is called:	Enthalpy change	Heat of sublimation	Bond energy	Internal energy change
4	An excess of aqueous $AgNO_3$ is added to aqueous $BaC\ell_2$ and precipitate is removed by filtration. What are the main ions in the filtrate?	Ag^+ and $N\overline{O}_3$ only	Ag^+, Ba^{2+} and $N\overline{O}_3$	Ba^{2+} and $N\overline{O}_3$ only	Ba^{2+}, $N\overline{O}_3$ and $C\ell$
5	Molarity of pure water is:	1	18	55.5	6
6	The cathodic reaction in the electrolysis of dil. H_2SO_4 with Pt electrodes is:	Reduction	Oxidation	Both oxidation and reduction	Neither oxidation nor reduction
7	In zero order reaction, the rate is independent of:	Temperature of reaction	Concentration of reactants	Concentration of products	None of these
8	Number of molecules of CH_4 in 16g of CH_4:	12.1×10^{23}	3.01×10^{23}	6.02×10^{23}	1.5×10^{23}
9	The volume occupied by one mole of a gas at STP is:	$54\ dm^3$	$22.414\ dm^3$	$2.24\ dm^3$	$2.4\ dm^3$
10	The strongest acid among halogen acids is:	HI	HBr	$HC\ell$	HF
11	Enthalpy of combustion of C_2H_5OH is:	$-1168\ kJ\ mol^{-1}$	$-1268\ kJ\ mol^{-1}$	$-1368\ kJ\ mol^{-1}$	$-1468\ kJ\ mol^{-1}$
12	Optimum pressure in Haber's process for synthesis of NH_3 is:	100 – 150 atm	200 – 300 atm	350 – 450 atm	500 – 600 atm
13	The reduction potential of Zn is:	$-0.76\ v$	$-0.34v$	$+0.34v$	$+0.76\ v$
14	The volume occupied by 1.4 g of N_2 at S.T.P is:	$2.24\ dm^3$	$22.4\ dm^3$	$112\ dm^3$	$1.12\ dm^3$
15	Solvent extraction is an equilibrium process and is controlled by:	Law of mass action	Distribution law	The amount of solvent used	The amount of solute
16	Pressure remaining constant, at which temperature the volume of a gas will become twice of what it is at 0^oC:	546^oC	200^oC	$546\ K$	$273\ K$
17	Acetone and chloroform are soluble in each other due to:	Intermolecular hydrogen bonding	Ion-dipole interaction	Instantaneous dipole	All of these

INTERMEDIATE PART-I (11th Class)	2023 (1st-A)	Roll No:
CHEMISTRY PAPER-I GROUP-II		
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.

MTN-11-2-23

SECTION-I

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

(i)	Define Stoichiometry. Write its assumptions.
(ii)	What do you know about Avogadro's number? Give one example.
(iii)	Calculate the mass in grams of 2.74 moles of $KMnO_4$. At mass of $Mn = 55$, At mass of $K = 39$.
(iv)	State Charles's Law. Write its mathematical form.
(v)	Write two application of Dalton's Law of Partial pressure.
(vi)	How you can determine the molecular mass of an unknown gas, if we know the pressure, temperature and volume along with the mass of that gas?
(vii)	Whichever gas is used in the discharge tube, the nature of the cathode rays remains the same. Why?
(viii)	Write names of different Quantum Numbers.
(ix)	Differentiate between Frequency and Wave number.
(x)	Define Enthalpy of formation. Give one example.
(xi)	Define Heat Capacity. Write its formula to calculate it.
(xii)	State First Law of Thermodynamics. Write its mathematical form.

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

(i)	Give difference between Qualitative analysis and Quantitative analysis.
(ii)	How rate of filtration can be increased by using fluted filter paper?
(iii)	Define Partition Chromatography. Give one example.
(iv)	What are Dipole-dipole forces of attraction? Give example.
(v)	Why ice floats over surface of liquid water?
(vi)	Define crystal lattice and unit cell.
(vii)	Why heat of hydrate of Li^+ is greater the that of Cs^+ ?
(viii)	Why ethylene glycol is added in radiator of automobile?
(ix)	What are Conjugated solutions? Give one example.
(x)	Define heterogeneous catalysis. Give an example.
(xi)	Differentiate between instantaneous rate of reaction and average rate of reaction.
(xii)	Discuss order of reaction with one example.

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

(i)	Why is sigma bond stronger than pi-bond?
(ii)	He_2 molecule is not formed. How do MOT justify it?
(iii)	Why do the ionization energies of elements decrease down the group of periodic table, although the nuclear charge increases?
(iv)	Why do we need buffer solutions?
(v)	What is the effect of rise in temperature on the solubility of KI in water?
(vi)	What is Lowry Bronsted idea of acids and bases?
(vii)	Write down the electrode reactions in alkaline battery.
(viii)	How can copper be purified electrolytically?
(ix)	What is emf of a cell?

SECTION-II

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

5.(a)	Explain Isotopes. Also describe relative abundance of isotopes.	4
(b)	A sample of nitrogen gas is enclosed in a vessel of volume $380\,cm^3$ at $120^\circ C$ and pressure of $101325\,Nm^{-2}$. This gas is transferred to a $10\,dm^3$ flask and cooled to $27^\circ C$. Calculate the pressure in Nm^{-2} entered by the gas at $27^\circ C$.	4
6.(a)	What is meant by vapour pressure of a liquid? How is it measured by manometric method?	4
(b)	Prove that $\Delta H = q_p$, complete mathematical form.	4
7.(a)	Explain Millikan's Oil Drop Method to calculate charge on electron.	4
(b)	The solubility of CaF_2 at $25^\circ C$ 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)	Write the postulates of VSEPR theory. Also discuss the structure of NH_3 on the basis of VSEPR theory.	4
(b)	What is Electrochemical series? Also explain its any two applications.	4
9.(a)	Write down measurement of elevation of boiling point by Landsberger's method with diagram.	3+1=4
(b)	Write down any four physical methods for the determination of rate of reaction.	4