

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 Al will react completely with how much mass of O_2 to produce Al_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 $25^\circ C$. 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 $110^\circ C$, 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	$AlCl_3$	H_2O	$BeCl_2$
13	Calorie is equivalent to:	0.4184 J	41.8 J	4.18 J	418.4 J
14	The solubility product of $AgCl$ is $2.0 \times 10^{-10} \text{ mole}^2 \text{ dm}^{-6}$. The maximum concentration of Ag^+ ions in the solution is:	$2.0 \times 10^{-10} \text{ mole dm}^{-3}$	$1.41 \times 10^{-5} \text{ mole dm}^{-3}$	$1.0 \times 10^{-10} \text{ mole dm}^{-3}$	$4.0 \times 10^{-20} \text{ mole dm}^{-3}$
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 $10^\circ C$ 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

SECTION-I

2. Attempt any eight parts.

8 × 2 = 16

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

8 × 2 = 16

3. Attempt any eight parts.

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

6 × 2 = 12

4. Attempt any six parts.

- Impure copper can be purified by electrolytic process. Explain by giving reason.
- Calculate the oxidation number of underlined elements $Cr_2(SO_4)_3$; $Na_2\underline{C}O_3$
- What is Thermochemistry? Give examples.
- Define enthalpy of reaction. Give example.
- In case of liquids and solids system $\Delta H \approx \Delta E$. Explain.
- Bond distance is the compromise distance between two atoms. Explain with reason.
- The melting points of electrovalent compounds are higher than covalent compounds. Explain with reason.
- There is no bond in chemistry with 100% ionic character. Explain.
- The atomic radius cannot be measured precisely. Explain with reason.

SECTION-II

3 × 8 = 24

NOTE: Attempt any three questions.

- Define stoichiometry. Write two assumptions of stoichiometry. Give example. 4
- Define boiling point. Explain effect of external pressure on boiling point. 4
- Calculate the mass of $1 dm^3$ of NH_3 gas at $30^\circ C$ and $1000 mm Hg$ pressure considering that NH_3 behaving ideally. 4
- Differentiate between atomic emission and atomic absorption spectrum with diagram. 4
- What is paramagnetic character? Give the reason for paramagnetic character of oxygen (O_2) through orbital picture. 4
- The solubility of CaF_2 in water 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
- Explain construction and working of Bomb calorimeter. Write also formula to calculate q . 3+1=4
- Define electrochemical series. Write its any two applications. 1+3=4
- What do you mean by elevation of boiling point? Explain Landsberger's method for its measurement. 4
- Discuss Half Life Method and method of large excess to find order of a reaction. 2+2=4