CHEMISTRY   PAPER-I   (NEW SCHEME)   GROUP-II

TIME ALLOWED: 20 Minutes   **OBJECTIVE**   MAXIMUM MARKS: 17

Note: 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. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. Attempt as many questions as given in objective type question paper and leave others blank. No credit will be awarded in case BUBBLES are not filled. Do not solve questions on this sheet of OBJECTIVE PAPER.

Q.No.1

(1) If 5.85 g of $NaCl$ (Mol. mass 58.5) is dissolved in 90 g of H_2O, the mole fraction of $NaCl$ will be:-

   (A) 0.01   (B) 0.1   (C) 0.0196   (D) 0.3

(2) The molal boiling point constant is the ratio of the elevation of boiling point to:-

   (A) Molarity   (B) Molality   (C) Mole fraction of solvent   (D) Mole fraction of solute

(3) Fuel cell convert chemical energy into:-

   (A) Electrical energy   (B) Light energy   (C) Heat energy   (D) Mechanical energy

(4) The Enzyme used for Hydrolysis of urea is:-

   (A) Invertase   (B) Urease   (C) Lipase   (D) Zymase

(5) Atom of _____ element has independent existence.

   (A) Fluorine   (B) Krypton   (C) Oxygen   (D) Nitrogen

(6) In combustion analysis, H_2O vapours are absorbed by:-

   (A) 50 % KOH (B) Al_2O_3 (C) $Mg(ClO_4)_2$ (D) SiO_2

(7) In _____ technique a solute distribute between two immiscible liquids.

   (A) Crystallization   (B) Solvent extraction   (C) Filtration   (D) Distillation

(8) The S.I unit of pressure is expressed in:-

   (A) Nm^{-1} (B) Nm^{-2} (C) Nm^{-3} (D) $mmHg$

(9) _____ is molecular solid.

   (A) $NaCl$ (B) CO_2 dry ice form   (C) Diamond   (D) Aluminium nitride

(10) Transition temperature of KNO_3 is:-

   (A) $13.2°C$ (B) $95.5°C$ (C) $128°C$ (D) $32.02°C$

(11) Orbitals having same energy are called:-

   (A) Hybrid orbitals   (B) Valence orbitals   (C) Degenerate orbitals   (D) d-orbitals

(12) Splitting of spectral lines when atoms are subjected to strong electric field is called:-

   (A) Zeeman effect   (B) Stark effect   (C) Photoelectric effect   (D) Compton effect

(13) _____ has net dipole moment.

   (A) CCl_4 (B) BF_3 (C) NH_3 (D) CO_2

(14) _____ is not paramagnetic.

   (A) O_2^{-2} (B) O_2 (C) N_2^{-2} (D) None of these

(15) _____ is not state function.

   (A) Pressure   (B) Volume   (C) Temperature   (D) Heat

(16) The sum of P^H and P^{OH} at 25°C always equal to:-

   (A) 7   (B) Zero   (C) 14   (D) 10^{-14}

(17) The units for kw of H_2O are:-

   (A) $mole/dm^3$ (B) $mol^2 dm^{-6}$ (C) $mol^{-2} dm^6$ (D) $mol^{-2} dm^{-3}$

CHEMISTRY   PAPER-I   (NEW SCHEME)   GROUP-II
TIME ALLOWED: 2.40 Hours   **SUBJECTIVE**   MAXIMUM MARKS: 68
NOTE: - Write same question number and its part number on answer book, as given in the question paper.

SECTION-I

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

(i) Mg – atom is twice heavier than that of C – atom why?

(ii)   Define Atomicity. Give two examples.

(iii) Calculate the mass in grams of 2.74 moles of $KMnO_4$.

(iv)   How are crystals dried using filter paper? Give its two disadvantages.

(v)   Write any four properties of a good solvent.

(vi)   Derive Avogadro's law from Kinetic equation(K.M.T).

(vii) Gases deviate from ideal behaviour more significantly at high pressure and low temperature. Give reason.

(viii) Water vapours do not behave ideally at 273 k.   Justify.

(ix)   Differentiate between reversible and irreversible reactions.

(x)   How do the buffer solutions act?

(xi)   Calculate the pH of 10^{-4} $mol\ dm^{-3}$ of HCl.

(xii) Explain that a mixture of NH_4OH and NH_4Cl gives us the basic buffer.

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

(i)   What is meant by Hydration?

(ii)   Define critical solution temperature or upper consulate temperature.

(iii) State Octet Rule. Give one example.

(iv)   Isomerism is not possible in ionic compounds. Why?

(v)   How bond length is effected by change of hybridization state?

(vi)   Calculate bond order of N_2 molecule.

(vii) What are Exothermic Reactions? Give example.

(viii) Define State Function.

(ix)   Diamond is hard.   Why?

(x)   Why metals are good conductor of electricity?

(xi)   What are "dipole – induced dipole forces"?

(xii) Ice has less density than liquid water. Why?

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

(i)   Give two defects in Bohr's atomic model.

(ii)   Whatever gas is used in the discharge tube. The nature of the cathode rays remains the same. Why?

(iii) The positive rays are also called canal rays. Why?

(iv)   Define Heisenberg's Uncertainty Principle and give its mathematical expression.

(v)   Define Oxidation and Oxidation Number.

(vi)   Lead accumulator is a rechargeable battery.   Prove.

(vii) $'Na'$ and $'K'$ can displace Hydrogen from acids but $'Pt'$, $'Pd'$ and $'Cu'$ can not, why?

(viii) Radioactive decay is always a first order reaction. Justify it.

(ix)   What is Negative Catalysis? Give one example.

SECTION-II

NOTE: - Attempt any three questions.

5.(a) A well known metal M reacts with S to form a compound M_2S_3. If 3.12 g of M (metal) reacts with exactly 2.88 g of S (Sulphur), what are the names of metal M and the compound M_2S_3. $3 \times 8 = 24$

(b)   Define ionic solids. Give three properties of ionic solids.   4

6.(a) Derive General Gas Equation and also give expression for density of a gas.   4

(b)   Explain Millikan's oil drop experiment to determine the charge of an electron.   4

7.(a) Define Hybridization and explain sp^2 – hybridization   4

(b)   Describe Glass Calorimeter for determination of enthalpy of a substance.   4

8.(a) State Le-Chatelier's Principle. Discuss the effect of change in pressure on equilibrium position.   4

(b)   Describe $Zn - Cu$ Galvanic Cell and explain the function of salt bridge.   4

9.(a) Derive Arrhenius Equation.   4

(b)   9.2 molar $HClO_4$ is available from the market. The density of this solution is $1.54g\ Cm^{-3}$. What is the percentage by weight of $HClO_4$?   4