CHEMISTRY PAPER-I (NEW SCHEME) **GROUP-I**

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) The size of an atom is in the range of:-

(A) $2 \times 10^{-9} m$ (B) $2 \times 10^{-10} m$ (C) $2 \times 10^{-11} m$ (D) $2 \times 10^{-12} m$

(2) _____ is used as antifreeze in radiator of automobile.

(A) Aspartame (B) Ethylene glycol (C) Serotenin (D) Hydrazine

(3) On cooling a hot saturated solution makes the solution:-

(A) Dilute (B) Super saturated (C) Opaque (D) Unsaturated

(4) _____ gas has lowest rate of diffusion.

(A) He (B) H_2 (C) O_2 (D) N_2

(5) The strongest acid among Halogen acids is:-

(A) HCl (B) HBr (C) HI (D) HF

(6) Dipole-induced dipole forces are also called:-

(A) Dipole-dipole forces (B) Ion-dipole forces (C) Debye forces (D) London dispersion forces

(7) $1 \overset{o}{A} =$ _____ m

(A) 10^{-10} (B) 10^{-11} (C) 10^{-12} (D) 10^{-13}

(8) The maximum number of unpaired electrons are present in:-

(A) $Fe = 26$ (B) $Ni = 28$ (C) $Cr = 24$ (D) $Na = 11$

(9) _____ element has highest value of electron affinity.

(A) Fluorine (B) Chlorine (C) Bromine (D) Iodine

(10) In ethyne molecule the number and nature of bonds are:-

(A) One sigma two pi (B) Two sigma one pi (C) Three sigma two pi (D) Two sigma two pi

(11) For a given process, the heat changes at constant pressure $\left(q_p\right)$ and at constant volume (q_v) are related to each other as:- (A) $q_p = q_v$ (B) $q_p < q_v$ (C) $q_p > q_v$ (D) $q_p = \dfrac{q_v}{2}$

(12) _____ affects the value of K_C.

(A) Concentration (B) Temperature (C) Catalyst (D) Pressure

(13) When ionic product of a solution is greater than the solubility product at a particular temperature then the solution is said to be:- (A) Unsaturated (B) Saturated (C) Very dilute (D) Super saturated

(14) 18 g of glucose is dissolved in 90 g of water. The relative lowering of vapour pressure is equal to:-

(A) $\dfrac{1}{51}$ (B) $\dfrac{1}{5}$ (C) 5.1 (D) 6

(15) The number of water molecules in $CuSO_4.5H_2O$ attacked with Cu^{2+} ion:-

(A) One (B) Two (C) Three (D) Four

(16) Anode and cathode in alkaline cell is made up of _____ respectively.

(A) MnO_2 and Zn (B) Pb and PbO_2 (C) Zn and Ag_2O (D) Zn and MnO_2

(17) Half life of a second order reaction is inversely proportional to:-

(A) Initial concentration of reactants (B) Final concentration of reactants

(C) Initial concentration of products (D) Final concentration of products

INTERMEDIATE PART-I (11th CLASS)
CHEMISTRY PAPER-I (NEW SCHEME)   GROUP-I
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)   Define Relative Atomic Mass and Atomic Mass Unit.
  (ii) N_2 and CO have the same number of electrons, protons and neutrons. Justify it.
  (iii)   Actual Yield is usually less than Theoretical Yield. Why?
  (iv)   Write any four characteristics of a good solvent for crystallization.
  (v)   Define Solvent Extraction and Partition Law.
  (vi)   Derive Avogadro's Law from Kinetic Molecular theory of gases.
  (vii)   Define Joule-Thomson effect and Critical temperature of a gas.
  (viii)   Give the units of Van der Waal's Constant 'a' and 'b'.
  (ix)   Define Law of Mass Action and Equilibrium Constant (K_c)
  (x)   Why do we need buffers in daily life?
  (xi)   What is Lowry-Bronsted concept of acids and bases?
  (xii)   Define Solubility Product Constant (K_{SP})

3.   **Attempt any eight parts.** $8 \times 2 = 16$
  (i)   State Electron Pool Theory.
  (ii)   What is Transition Temperature? Give an example.
  (iii)   Give two uses of Liquid Crystals.
  (iv)   Give reason that Earthenware Vessels keep water cool.
  (v)   How nature of bond can be determined by electronegative values?
  (vi)   Why Ionic radius is greater than Atomic radius?
  (vii)   Write two points of Valence Bond theory.
  (viii)   Draw molecular orbital picture of Nitrogen molecule.
  (ix)   Define System and Surrounding.
  (x)   What is Standard enthalpy of Neutralization? Give an example.
  (xi)   What is meant by Water of Crystallization? Give two examples.
  (xii)   Aqueous solution of $CuSO_4$ is acidic in nature. Explain.

4.   **Attempt any six parts.** $6 \times 2 = 12$
  (i)   Why is the $\frac{e}{m}$ value for the positive rays always smaller that that of cathode rays?
  (ii)   The potential energy of an electron in an atom is negative. Give reason.
  (iii)   What is fine structure of Hydrogen spectrum?
  (iv)   State Heisenberg's uncertainty principle. Give its mathematical formula.
  (v)   What is Anodized Aluminium? Give its advantages.
  (vi)   Write reactions taking place at anode and cathode in silver oxide battery.
  (vii)   What is the difference between Ionization and Electrolysis?
  (viii)   What are reaction intermediates? Give one example.
  (ix)   Name four physical methods for the determination of rate of a chemical reaction.

SECTION-II

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

5.(a)   Define boiling point and how does it is effected by external pressure? Explain briefly.   4
  (b)   A mixture of two liquids, hydrazine (N_2H_4) and N_2O_4 are used in rockets. They produce N_2 and water vapours. How many grams of N_2 gas will be formed by reacting 100 g of N_2H_4 and 200 g of N_2O_4 $2N_2H_4 + N_2O_4 \rightarrow 3N_2 + 4H_2O$ 4

6.(a)   Define critical temperature of gases. What is its importance in liquefaction of gases? Discuss Linde's method of liquefaction of gases.   4
  (b)   What are x-rays? What is their origin? How was the idea of atomic number derived from discovery of x-Rays and Moseley's Law.   4

7.(a)   Define atomic orbital Hybridization. Explain Sp^2-Hybridization with the help of BF_3 molecule.   4
  (b)   How enthalpy of reaction can be measured by Bomb-Calorimeter?   4

8.(a)   Explain Lowry Bronsted Acid and Base concept. Explain giving examples.   4
  (b)   Write any four applications of electrochemical series.   4

9.(a)   The boiling point of a solution containing 0.2 g of a substance 'A' in 20.0 g of ether (molar mass = 74) is 0.17 K higher than that of pure ether. Calculate the molar mass of 'A'. Molal boiling point constant of ether is 2.16 k.   4
  (b)   Define Catalysis. Differentiate between Homogeneous catalysis and Heterogenous catalysis   4

CHEMISTRY   PAPER-I   (NEW SCHEME)   GROUP-II
TIME ALLOWED: 20 Minutes   **OBJECTIVE**   MAXIMUM MARKS: 17

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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) $\ddot{N}H_3$ (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) $mol^{-2} dm^{-3}$

MTN-11-G2-18
2018 (A)   Roll No: _____
INTERMEDIATE PART-I (11th CLASS)
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) $3 \times 8 = 24$
reacts with exactly 2.88 g of S (Sulphur), what are the names of metal M and
the compound M_2S_3.

(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 $1.54\ g\ Cm^{-3}$.   4
What is the percentage by weight of $HClO_4$?   4