

## 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) Serotonin (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)  $1 \text{ \AA} = \text{_____} m$  (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 ( $q_p$ ) 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)  $q_p = \frac{q_v}{2}$
- (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)  $\frac{1}{51}$  (B)  $\frac{1}{5}$  (C) 5.1 (D) 6
- (15) The number of water molecules in  $CuSO_4 \cdot 5H_2O$  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 (11<sup>th</sup> 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 × 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 × 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 × 2 = 12

- (i) Why is the  $\frac{e}{m}$  value for the positive rays always smaller than 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 × 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 20.0g 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