1118 Warning:- Please write your Roll No. in the space provided and sign. Roll No---------------

(Inter Part – I) (Session 2015-17 to 2017-19) Sig. of Student ------------------

Chemistry (Objective) **(Group - I)** Paper (I)

Time Allowed:- 20 minutes **PAPER CODE 2483** 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 circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE**, which is printed on this question paper, on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.

Q. 1

1) The order of reaction for the reaction $NO + O_3 \longrightarrow NO_2 + O_2$ is
   (A) Two   (B) Three   (C) One   (D) Zero

2) The number of isotopes of Cd is
   (A) 6   (B) 2   (C) 9   (D) 11

3) Ascorbic Acid is
   (A) Vitamin A   (B) Vitamin B   (C) Vitamin C   (D) Vitamin D

4) The comparative rates at which the solutes move in paper chromatography depends on
   (A) Size of paper   (B) R_f value of solute   (C) Temperature of experiment   (D) None of these

5) The order of rate of diffusion of gases NH_3, SO_2, Cl_2 and CO_2 is.
   (A) $NH_3 > SO_2 > Cl_2 > CO_2$ (B) $NH_3 > CO_2 > SO_2 > Cl_2$ (C) $Cl_2 > SO_2 > CO_2 > NH_3$ (D) $NH_3 > CO_2 > Cl_2 > SO_2$

6) Cholesteryl benzoate turn into milky liquid at
   (A) 140 °C   (B) 145 °C   (C) 148 °C   (D) 149 °C

7) Acetone and chloroform are soluble in each other due to
   (A) Ion dipole interaction   (B) Intermolecular hydrogen bonding   (C) Instantaneous dipole   (D) All of the above

8) The ion that is isoelectronic with CO is
   (A) $C\overline{N}$ (B) O_2^+ (C) O_2^- (D) N_2^+

9) The velocity of photon is
   (A) Independent of its wavelength   (B) Depend on its source   (C) Nature of discharge tube   (D) Equal to square of its amplitude

10) Which of the Hydrogen halides has the highest percentage of ionic character?
    (A) HCl   (B) HBr   (C) HF   (D) HI

11) The bond order of N_2 molecule is
    (A) Zero   (B) 1   (C) 2   (D) 3

12) Enthalpies of all elements in their standard states are
    (A) Unity   (B) Zero   (C) Always Positive   (D) Always negative

13) The total heat content of system is called
    (A) Entropy   (B) Enthalpy   (C) Temperature   (D) Internal energy

14) The exothermic process is
    (A) Evaporation   (B) Sublimation   (C) Combustion of methane   (D) Boiling

15) Which one of the following is an ideal solution.
    (A) $C_2H_5 - OH$ and H_2O (B) C_6H_6 and CCl_4 (C) $CHCl_3$ and $(CH_3)_2 CO$ (D) None of these

16) Which salt when dissolved in water form a solution with pH greater than 7
    (A) $CuSO_4$ (B) NaCl   (C) NH_4Cl (D) Na_2CO_3

17) Standard Hydrogen Electrode (SHE) is made of
    (A) Ag foil   (B) Au foil   (C) Cu foil   (D) Pt foil

1118 (Inter Part - I) Warning:- Please, do not write anything on this question paper except your Roll No.
Chemistry (Subjective) (Session 2015-17 to 2017-19) Paper (I)
Time Allowed: 2.40 hours Group (I) Maximum Marks: 68

Section ------------------ I

2. **Answer briefly any Eight parts from the followings:-** $8 \times 2 = 16$
  (i) Write only names of any four methods employed for the separation of Isotopes.
  (ii) Define gram atom giving an example. (iii) Why is theoretical yield greater than actual yield?
  (iv) Differentiate between stationary and mobile phase. (v) Write uses of Chromatography.
  (vi) Justify that the volume of given mass of a gas becomes theoretically zero at $-273\ °C$.
  (vii) Hydrogen and Helium are ideal at room temperature, but SO_2 and Cl_2 are non ideal explain it.
  (viii) Write two applications of Plasma. (ix) Define common Ion effect with one example.
  (x) Define solubility product giving at least one example.
  (xi) Define Law of Mass action. (xii) Define Lowry Bronsted acid and base concept.

3. **Answer briefly any Eight parts from the followings:-** $8 \times 2 = 16$
  (i) What are Hydrates? Give an example. (ii) Define ppm and Mole fraction.
  (iii) How electron affinity changes in a group? (iv) Why sigma bond is stronger than π bond?
  (v) What is meant by dipole moment and what are its units?
  (vi) How a co-ordinate covalent bond differs from a covalent bond?
  (vii) What is meant by internal energy of a System? (viii) Define System and Surrounding.
  (ix) HCl is stronger acid than HF. Why? (x) Iodine dissolves readily in CCl_4. Why?
  (xi) Define Polymorphism and Allotropy.
  (xii) Why vapour pressure of CCl_4 is 87 torr while isopentane is 580 torr at $20\ °C$?

4. **Answer briefly any Six parts from the followings:-** $6 \times 2 = 12$
  (i) Describe Zeeman's and Stark's effect.
  (ii) Calculate the mass of an electron, $\frac{e}{m} = 1.7588 \times 10^{11}$ coulombs/kg

  (iii) The $\frac{e}{m}$ values of positive rays obtained from hydrogen gas is 1836 Time less than that of Cathode rays. Justify.
  (iv) Differentiate between frequency and wave number.
  (v) 'Zn' can displace Hydrogen from dilute acid solution but 'Cu' cannot. Justify.
  (vi) Calculate oxidation number of 'Cr' in (a) $CrCl_3$, (b) $K_2Cr_2O_7$
  (vii) What is difference between Primary and Secondary Cell.
  (viii) What is Zero order reaction? Give one example.
  (ix) What is specific rate Constant or Velocity Constant.

Section ------------ II

Note: Attempt any three questions. $(8 \times 3 = 24)$
  5. (a) Ethylene glycol is used as automobile antifreez. It has 38.7 % carbon, 9.7 % hydrogen and 51.6 % oxygen. Determine its empirical formula.
    (b) Explain the term molecular solid. Give three properties of molecular solids.
  6. (a) Give explaination of applications of Dalton's Law of Partial Pressure of gases.
    (b) Derive an expression for radius of nth orbit of Hydrogen atom with the help of Bohr's atomic model.
  7. (a) Write down main points of Valence Shell electron pair repulsion (VSEPR) theory.
    (b) Describe Bomb Calorimeter, for calculation of enthalpy of a substance.
  8. (a) State Law of mass action. Derive an equilibrium constant expression for a general reaction.
    (b) Write a note on Fuel cells.
  9. (a) What is Catalyst? Write its three characteristics?
    (b) The freezing point of pure Camphor is $178.4\ °C$. Find the freezing point of a solution containing 2.0 g of non-volatile compound, having molecular mass 140, in 40 g of Camphor. The molal freezing point constant of Camphor is $37.7\ °C\ kg\,mol^{-1}$

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