CHEMISTRY Part-I	Paper Code	Roll No. of the Student					
Time: 20 Minutes Marks: 18	① ② ③						
Multiple Choice Questions 01 Mark for each		Serial No. Of the Answer Book_____					

SECTION-A

Note:

1) Attempting all MCQs is compulsory. This paper along with the OMR sheet must be returned to the superintendent after due time.
2) Fill the circle Ⓐ/Ⓑ/Ⓒ/Ⓓ, which one is correct with blue or black ball point, in this sheet as well as in separate OMR Sheet like ●
3) If more than one circle in the OMR sheet is filled then no credit will be given to such answer.

I.i. The molar volume of CO_2 gas at STP is.
   (A) $44.8 dm^3$ (B) $22.4 dm^3$ (C) $60 dm^3$ (D) $11.2 dm^3$

ii. According to Plank's Quantum theory Energy absorbed in case of light is called.
   (A) Wave Packets   (B) Unit Waves   (C) Pulse of Energy   (D) Photons

iii. Points where the possibility of finding electron is zero is called.
   (A) Node   (B) Orbit   (C) Orbital   (D) Lobes

iv. An unhybridized P-orbitals overlap linearly to form.
   (A) π bond   (B) σ bond   (C) Co-ordinate bond   (D) None of these

v. $22.4 dm^3$ of a gas at 273k & one atm pressure has 6.02×10^{23} molecules. This statement refers to.
   (A) Charle's Law   (B) Boyle's Law   (C) Avogadro's Law   (D) Ideal Gas Law

vi. By increasing the external Pressure the boiling point of liquid will be.
   (A) Increases   (B) Decreases   (C) Remain constant   (D) Reduced

vii. The apparent shape of the crystal depends upon.
   (A) Cleavage plane   (B) Symmetry   (C) Method & Conditions   (D) All of them

viii. Bond lengths are experimentally determined by.
   (A) Electron diffraction   (B) x-ray diffraction   (C) Spectral Studies   (D) All of them

ix. For reaction $H_2 + I_2 \rightleftharpoons 2HI$ all of the following are true Except.
   (A) $Kp=Kc$ (B) $\Delta n = 0$ (C) $RT^{\Delta n} = 1$ (D) $Kp > Kc$

x. Gum in water is a type of.
   (A) A coarse mixture   (B) A suspension   (C) A colloidal dispersion   (D) A true solution

xi. When 1mole of solute dissolved in $500 cm^3$ of solution its concentration will be.
   (A) 1M   (B) 2M   (C) 8M   (D) 4M

xii. The flow of solvent molecules to the solution is called.
   (A) Reverse osmosis   (B) Endo osmosis   (C) Exoosmosis   (D) Parallel osmosis

xiii. Which one of the following process has ΔH positive?
   (A) Ionization energy   (B) Electron affinity   (C) Combustion   (D) Exothermic reaction

xiv. SHE act as Anode when coupled with elements having.
   (A) Positive reduction potential   (B) Negative reduction potential   (C) Zero reduction potential   (D) Standard reduction potential

xv. The oxidation number of 'Cl' in $HClo_3$ is.
   (A) -1   (B) +1   (C) +3   (D) +5

xvi. The largest number of molecules are present in.
   (A) 44g of Co_2 (B) 18g of H_2O (C) 360g of $C_6H_{12}O_6$ (D) 1 mole of SO_2

xvii. Which particle is 1842 times as heavy as Electron.
   (A) Proton   (B) Neutron   (C) Photon   (D) X-rays

xviii. Which set of four quantum numbers is possible for an electron in 3P orbitals.
   (A) $n=3, l=2, m=1, s=+\frac{1}{2}$ (B) $n=3, l=1, m=3, s=-\frac{1}{2}$ (C) $n=3, l=1, m=3, s=+\frac{1}{2}$ (D) $n=3, l=0, m=0, s=+\frac{1}{2}$

CHEMISTRY Part-I

Note: Time allowed for section B and C is 2 hours and 40 minutes.

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SECTION "B"   **Marks: 40**

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I.   **Attempt any Ten Parts out of the following. Each Part carries equal marks.**

i. What is (n+l) rule? Write down electronic configuration of Cu=29.

ii. Calculate the molarity of NaoH solution when 20g NaoH dissolved in 250ml water.

iii. Balance the following equation by oxidation reduction method.

     i. $Fe + V_2O_3 \longrightarrow Fe_2O_3 + VO$

     ii. $MnO_2 + Hcl \longrightarrow Mncl_2 + Cl_2 + H_2O$

iv. Give reason exothermic reactions are always spontaneous.

v. A solution contain 2moles of Alcohols & 18g of H_2O. Calculate the mole fraction of alcohol & water.

vi. How buffer solution resists change in PH when small amount of acid or base is added?

vii. How K_c value can be used to predict the direction of a reaction.

viii. Define the following terms.

     i. Geometrical Shape.   ii. Anisotropy   iii. Cleavage Plane   iv. Symmetry

ix. Discuss four factors that affects the viscosity of Liquids.

x. Total pressure of a gaseous mixture depends upon total number of moles of mixture justify the statement.

xi. Calculate the mass of $1dm^3$ of NH_3 gas at 30°c & 1000mm Hg pressure considering NH_3 is behaving ideally?

xii. Why oxygen molecule is Paramagnetic in nature?

xiii. What are the short comings of Bohr's atomic model.

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Result.pk

SECTION "C"   **Marks: 27**

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Note: Attempt any Three questions of the following. All question carries equal Marks.

III.   (a)   What are limitting & Excess reagents.   4

        (b)   When steam is passed over red hot carbon it gives water gas   5

            $H_2O_{(g)} + C_{(s)} \longrightarrow CO + H_2$. Which one is limitting reagent if 49g of carbon mixed with 3.78 moles of H_2O vapours also calculate maximum amount of product formed.

IV.   (a)   Calculate the energy difference between two energy levels in terms.   4

            (a)   Frequency   (b)   Wave number

        (b)   What is spectrum differentiate between contineous & line spectrum.   5

V.   (a)   Define law of mass action? Derive its mathematical expression.   4

        (b)   A mixture containing 1 mole of acetic acid & 3 mole of ethyl alcohol is heated   5

            up to 100c°. Calculate the mole acetate at equilibrium. $K_c = 4$

            $CH_3COOH + C_2H_5OH \rightleftharpoons CH_3COOC_2H_5 + H_2O$

VI.   (a)   Define the following terms.   5

            i. Rate of reaction   ii. Rate law   iii. Order of reaction

            iv. Activation energy   v. Specific rate constant.

        (b)   Discuss role of. i. Temperature   ii. Catalyst on rate of reaction.   4