Answer Sheet No. _____

**CHEMISTRY** (OBJECTIVE)
**PART – I** 019/1 (✡✡✡✡)
(INTERMEDIATE)

Roll No. _____

Sign. Dy. Supdnt. _____

Fictitious Roll No. (For Office Use) _____

Sign. Candidate _____

# CHEMISTRY (INTERMEDIATE)

(PART – I) (✡✡✡✡) 019/1

Marks : 17
Time : 20 Minutes

(OBJECTIVE PART)

**Note:- Write your Roll No. in space provided. Over writing, cutting, using of lead pencil will result in loss of marks. All questions are to be attempted.**

1- Each question has four possible answers, Tick ( √ ) the correct answer. (17)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | Which one of the following is temperature dependent; | | | | | | | |
| | A | Molarity | B | Molality | C | Mole fraction | D | ppm |
| 2 | Oxidation state of oxygen in potassium super oxide is; | | | | | | | |
| | A | $-2$ | B | $+\frac{1}{2}$ | C | 0 | D | $-\frac{1}{2}$ |
| 3 | The rate of reaction; | | | | | | | |
| | A | Increases as reaction proceeds | B | Decreases as the reaction proceeds | C | Remains the same as the reaction proceeds | D | May increase or decrease as reaction proceeds |
| 4 | The number of moles of $CO_2$ which contain 8.0g of oxygen; | | | | | | | |
| | A | 0.25 | B | 0.50 | C | 1.0 | D | 1.50 |
| 5 | The volume occupied by 1.4g of $N_2$ at S.T.P. is; | | | | | | | |
| | A | 2.24 $dm^3$ | B | 22.4 $dm^3$ | C | 1.12 $dm^3$ | D | 112 $cm^3$ |
| 6 | Which one of the following is not purified by sublimation; | | | | | | | |
| | A | Naphthalene | B | Silicon dioxide | C | $I_2$ | D | Benzoic acid |
| 7 | Number of Molecules in one $dm^3$ of water is close to; | | | | | | | |
| | A | $\frac{6.02}{22.4} \times 10^{23}$ | B | $\frac{12.04}{22.4} \times 10^{23}$ | C | $\frac{18}{22.4} \times 10^{23}$ | D | $55.6 \times 6.02 \times 10^{23}$ |
| 8 | The order of the 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 | $NH_3 > CO_2 > Cl_2 > SO_2$ |
| 9 | In order to mention the boiling point of water at 110 °C, the external pressure should be; | | | | | | | |
| | A | Between 760 torr and 1200 torr | B | Between 200 torr and 760 torr | C | 765 torr | D | Any value of pressure |
| 10 | At 323 torr Boiling point of $H_2O$ is; | | | | | | | |
| | A | 120 °C | B | 100 °C | C | 69 °C | D | 110 °C |
| 11 | Orbitals having same energy are called; | | | | | | | |
| | A | Hybrid orbitals | B | Valence orbitals | C | d-orbitals | D | Degenerate orbitals |
| 12 | When 6d orbital is complete, the entering electron goes into; | | | | | | | |
| | A | 7f | B | 7s | C | 7p | D | 7d |
| 13 | Which of the following species has unpaired electrons in anti bonding molecular orbitals; | | | | | | | |
| | A | $O_2^{2+}$ | B | $N_2^{2-}$ | C | $B_2$ | D | $F_2$ |
| 14 | Which of the hydrogen halide has the highest percentage of ionic character; | | | | | | | |
| | A | HCl | B | HBr | C | HF | D | HI |
| 15 | For a given reaction, the heat change at constant pressure and at constant volume are related to each other as; | | | | | | | |
| | A | $q_p = q_v$ | B | $q_p < q_v$ | C | $q_p > q_v$ | D | $q_p = \frac{q_v}{2}$ |
| 16 | pH of pure water is; | | | | | | | |
| | A | 12 | B | 4.8 | C | 7.0 | D | 55.5 |
| 17 | Which one of the following is not a colligative property; | | | | | | | |
| | A | Lowering of vapour pressure | B | Elevation of B.P | C | Depression of Freezing point | D | Boiling point of solution |

(The End)

**CHEMISTRY** 019/1
PAPER : PART – I (INTERMEDIATE)
MARKS: 68
TIME : 2:40 Hours (SUBJECTIVE PART)

A-SK-11-19

## SECTION – I

2- Write short answers of any eight parts. (2 x 8 = 16)

| | | | |
|---|---|---|---|
| i | Define molecular ion. Give its two examples. | ii | Amount of product is controlled by limiting reactant why? |
| iii | 23 g of sodium and 238 g of uranium have equal number of atoms in them. Justify. | iv | State distribution law. |
| v | Write down four properties of an ideal solution chosen for crystallization. | vi | Give any two applications of Dalton's Law of partial pressures. |
| vii | Derive Avogadro's Law from kinetic molecular theory of gases. | viii | Define critical temperature (Tc). |
| ix | Write down any two applications of plasma. | x | Why the aqueous solution of $CuSo_4$ is acidic? |
| xi | Define molality. Give its formula. | xii | Differentiate between zeotropic and azeotropic mixtures. |

3- Write short answers of any eight parts. (2 x 8 = 16)

| | | | |
|---|---|---|---|
| i | Explain action of soaps and detergents in light of hydrogen bonding. | ii | Evaporation causes cooling. Justify. |
| iii | Define Boiling point and molar heat of vapourization. | iv | Write down names of different types of crystalline solids. |
| v | What is atomic emission spectrum? | vi | State Moseley's Law and writes its mathematical equation. |
| vii | Derive de-Broglie's wave equation $\lambda = \frac{h}{mv}$ | viii | State Heisenberg's uncertainty principle. Give its mathematical equation. |
| ix | What is acidic buffer? Give one example. | x | Write down Henderson's equation for acidic buffer and basic buffer. |
| xi | Explain specific rate constant of a reaction. | xii | Write down the four names of different methods to determine order of a reaction and discuss any two methods in short. |

4- Write short answers of any six parts. (2 x 6 = 12)

| | | | |
|---|---|---|---|
| i | Why $\pi$ bond is weaker than $\sigma$ bond? | ii | Define Electron affinity with examples. |
| iii | Why lone pair of electrons occupy more space then bond pair of electrons? | iv | Why dipole moment of $CO_2$ is zero but that of $SO_2$ is 1.6D? |
| v | Differentiate between Spontaneous and Non-Spontaneous reactions. | vi | Why it is necessary to mention physical state of reactants and products in a thermochemical reaction? |
| vii | Differentiate between Electrolytic and Galvanic cells. | viii | Determine the oxidation number of Cr in $K_2Cr_2O_7$. |
| ix | Write two functions of salt bridge. | | |

## SECTION – II

Note:- Attempt any three questions. (8 x 3 = 24)

| | | | |
|---|---|---|---|
| 5 | (a) | Explain Combustion Analysis of an organic compound along with diagram. | (04) |
| | (b) | How Vapour Pressure of a liquid can be measured with the help of Manometric Method. Explain with diagram. | (04) |
| 6 | (a) | Calculate the density of methane gas at $0^0$C and 1 atmospheric pressure. | (04) |
| | (b) | Describe Millikan's oil drop method for determination of charge on electron. | (04) |
| 7 | (a) | Define dipole moment. Give its mathematical equation. What are its different units? | (04) |
| | (b) | Define Hess's Law of constant heat summation. Explain it with an example. | (04) |
| 8 | (a) | Define half-life period. How is half-life method used to determine the order of reaction? | (04) |
| | (b) | What is the percentage ionization of acetic acid in a solution in which 0.1 moles of it has been dissolved per $dm^3$ of solution. $K_a$ for $CH_3COOH = 1.85 \times 10^{-5}$ | (04) |
| 9 | (a) | Describe Raoult's Law in three different ways, when solute is non volatile and solvent is volatile. | (04) |
| | (b) | Define oxidation number, also write at least six rules for assigning oxidation number. | (04) |

(The End)