Roll No. of Candidate : _____

CHEMISTRY **Intermediate Part-I , Class 11th (1stA 324- IV)** **Paper : I** **Group – I**

Time: 20 Minutes **OBJECTIVE** **Code : 6487** GUJ-I-24 **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.

1. 1 - Gooch Crucible is made up of
(A) glass (B) porcelain (C) rubber (D) plastic

2 - The pH of 10^{-3}moles/dm^3 of an aquous solution of H_2SO_4 is
(A) 3.0 (B) 2.7 (C) 2.0 (D) 1.5

3 - Enzyme used for hydrolysis of sucrose is
(A) invertase (B) urease (C) lipase (D) zymase

4 - The partial pressure of Oxygen in lungs is
(A) 159 torr (B) 116 torr (C) 130 torr (D) 140 torr

5 - The voltage of Silver Oxide battery is about
(A) 1.5 V (B) 2 V (C) 2.5 V (D) 3 V

6 - The change in heat energy of chemical reaction at constant temperature and pressure is called
(A) enthalpy change (B) heat of sublimation (C) bond energy (D) internal energy change

7 - Allotropy is the property of
(A) compound (B) mixture (C) element (D) molecule

8 - Bond angle of NF_3 is
(A) 102° (B) 104° (C) 109.5° (D) 120°

9 - A solution of glucose is 10% w/v. The volume in which its 1g mole is dissolved will be
(A) 1 dm^3 (B) 1.8 dm^3 (C) 200 cm^3 (D) 900 cm^3

10 - Decolourizing agent used in crystallization is
(A) P_2O_5 (B) animal charcoal (C) $KMnO_4$ (D) CCl_4

11 - The number of isotopes of Nickle are
(A) 2 (B) 3 (C) 5 (D) 7

12 - Number of molecules in 1dm^3 of water is close to
(A) $\frac{6.02}{22.4}\times10^{23}$ (B) $\frac{12.04}{22.4}\times10^{23}$ (C) $\frac{18}{22.4}\times10^{23}$ (D) $55.5\times6.02\times10^{23}$

13 - Splitting of spectral lines when atoms are subjected to strong electric field is called
(A) Zeeman's effect (B) Stark effect (C) photoelectric effect (D) Compton effect

14 - Bond order of O_2 according to MOT is
(A) 1 (B) 2 (C) 3 (D) 4

15 - $(n + \ell)$ value for 4p orbital is
(A) 4 (B) 5 (C) 6 (D) 7

16 - Which of following will have Hydrogen bonding in its molecules
(A) C_2H_5OH (B) CCl_4 (C) I_2 (D) NaCl

17 - The empirical formula of glucose $C_6H_{12}O_6$ is
(A) $C_6H_{12}O_6$ (B) CHO (C) CH_2O (D) CH_2O_2

CHEMISTRY | Intermediate Part-I , Class 11th (1stA 324) | Paper : I | Group – I

Time: 2:40 Hours | SUBJECTIVE GUJ-I-24 | Marks: 68

Note: Section-I is compulsory. Attempt any THREE (3) questions from Section-II.

SECTION – I

2. Write short answers to any EIGHT questions. **(2 x 8 = 16)**

i - Why atom cannot be visualized by ordinary microscope?
ii - Calculate number of gram atoms in 0.1 Kg of Na (At. wt of Na = 23 a.m.u)
iii - How can limiting reactant be identified?
iv - How can rate of filteration be enhanced?
v - What is chromatography? Write its uses.
vi - What is R_f value? Write its unit.
vii - In a graph of P Vs 1/V, what is the result of increase in temperature?
viii - Give two characteristics of plasma.
ix - Differentiate between diffusion and effusion.
x - What is pH of 10^{-4} M $Ba(OH)_2$ solution?
xi - What are conjugate acids and bases?
xii - Define law of mass action.

3. Write short answers to any EIGHT questions. **(2 x 8 = 16)**

i - Why acetone and chloroform are miscible into each other? Show with the help of structures.
ii - Why ice floats on the surface of water?
iii - Define symmetry. What are symmetry elements?
iv - Define unit cell. What are unit cell dimensions?
v - How positive rays are produced?
vi - Define Moseley law. Write down its two important points.
vii - What is Davisson and Germer experiment to verify the dual nature of matter?
viii - Write down two Moseley's conclusions.
ix - Molal aqueous solutions are more dilute than molar solutions. Justify.
x - Write down any two characteristics of ideal solutions.
xi - Define half-life period. Give mathematical formula of half-life period for second order and third order reaction.
xii - What is autocatalysis? Give one example.

4. Write short answers to any SIX questions. **(2 x 6 = 12)**

i - Write down factors influencing electron affinity.
ii - Cationic radius is less than its parent atom why?
iii - How electronegativity changes in a group?
iv - Bond distance is the compromise distance between two atoms. How?
v - What are exothermic reactions? Give example.
vi - Define enthalpy of combustion. Give example.
vii - State first law of thermodynamics.
viii - The Nickle Cadmium cell is called rechargeable cell. Give electrodic reactions.
ix - Impure Cu can be purified by electrolytic process. How?

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(Turn Over)

SECTION – II

5. **(a)** Differentiate the following with examples. **(2+2=4)**
   (i) Empirical and Molecular formula
   (ii) Mole and Avogadro's number

   (b) Define Hydrogen Bonding and explain any three applications of it. **(4)**

6. **(a)** One mole of methane is maintained at 300 K. Its volume is 250 cm^3. Calculate the pressure exerted by the gas when the gas is ideal **(4)**

   (b) What is J.J. Thomson's experiment for determining $\frac{e}{m}$ value of electron? **(4)**

7. **(a)** Explain the shapes of NH_3 and H_2O molecules according to hybridization theory. **(4)**

   (b) The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at 25°C. Calculate the solubility of the compound. **(4)**

8. **(a)** Define 1st law of thermodynamics. Explain it in detail. Also prove that $\Delta E = q_v$ **(4)**

   (b) Write electrode reactions for following batteries **(4)**
   (i) Alkaline Battery
   (ii) Silver Oxide Battery

9. **(a)** Derive a relationship : $M_2 = \frac{K_f}{\Delta T_f} \cdot \frac{1000\, W_2}{W_1}$ **(4)**

   (b) What is half-life period? Prove that $\left[t_{\frac{1}{2}}\right]_n \propto \frac{1}{a^{n-1}}$ **(4)**

Roll No. of Candidate : _____

CHEMISTRY **Intermediate Part-I , Class 11th (1stA 324- IV)** **Paper : I** **Group – II**

Time: 20 Minutes **OBJECTIVE** **Code : 6488** GUJ-2-24 **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.

1. 1 - The compound which can undergo sublimation is

(A) $KMnO_4$ (B) $CaCO_3$ (C) NH_4Cl (D) Na_2CO_3

2 - For which system does the equilibrium constant (Kc) has units of $(concentration)^{-1}$?

(A) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ (B) $H_2 + I_2 \rightleftharpoons 2HI$

(C) $2NO_2 \rightleftharpoons N_2O_4$ (D) $2HF \rightleftharpoons H_2 + F_2$

3 - The unit of the rate constant is the same as that of the rate of reaction in

(A) first order reaction (B) second order reaction

(C) third order reaction (D) zero order reaction

4 - At room temperature, the rate of diffusion of N_2 and CO is same, because

(A) both are diatomic gases (B) both are non-polar gases

(C) both have multiple bonds (D) both have same molar mass

5 - In the reaction $K_2Cr_2O_7 + 14HCl \rightarrow 2KCl + 2CrCl_3 + 3Cl_2 + 7H_2O$ the oxidation state of Cr changes from

(A) +1 to +7 (B) +6 to +3 (C) +7 to –1 (D) +2 to +3

6 - For the reaction $NaOH + HCl \rightarrow NaCl + H_2O$, the change in enthalpy is called

(A) heat of reaction (B) heat of neutralization

(C) heat of formation (D) heat of combustion

7 - Which of the following is not a pseudo solid?

(A) Glass (B) rubber (C) NaCl (D) plastics

8 - Which of the following compounds has the highest percentage of ionic character?

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

9 - Which of the following solutions has the highest boiling point?

(A) 5.85% solution of NaCl (B) 18.0% solution of $C_6H_{12}O_6$

(C) 6.0% solution of Urea (D) all have the same boiling points

10 - Solvent extraction method is a particularly useful technique for separation when the product to be separated is

(A) volatile or thermally stable (B) volatile or thermally unstable

(C) non- volatile or thermally unstable (D) non- volatile or thermally stable

11 - The total number of covalent bonds in 4.5 g of water is

(A) 6.02×10^{23} (B) 6.02×10^{22} (C) 3.01×10^{22} (D) 3.01×10^{23}

12 - The deviation of a gas from ideal behaviour is maximum at

(A) –10°C and 5.0 atm (B) –10°C and 2.0 atm

(C) 100°C and 2.0 atm (D) 0°C and 2.0 atm

13 - When 6d orbital is complete, the entering electron goes into

(A) 7f (B) 7s (C) 7p (D) 7d

14 - The geometry of NH_3 is

(A) linear (B) trigonal planar (C) tetrahedral (D) trigonal pyramidal

15 - The velocity of photon is

(A) independent on its wavelength (B) depends on its wavelength

(C) equal to square of its amplitude (D) depends on its source

16 - In order to keep the boiling point of water at 110°C, the external pressure should be

(A) between 200 torr and 760 torr (B) between 760 torr and 1200 torr

(C) 765 torr (D) below 765 torr

17 - The largest number of molecules are present in

(A) 3.6 g of H_2O (B) 4.8 g of C_2H_5OH (C) 2.8 g of CO (D) 5.4 g of N_2O_5

CHEMISTRY | Intermediate Part-I , Class 11th (1stA 324) | Paper : I | Group – II

Time: 2:40 Hours | SUBJECTIVE GUJ-2-24 | Marks: 68

Note: Section-I is compulsory. Attempt any THREE (3) questions from Section-II.

SECTION – I

2. Write short answers to any EIGHT questions. (2 x 8 = 16)

i - Differentiate between experimental yield and theoretical yield.
ii - Differentiate between atom and molecule.
iii - Mg atom is twice heavier than Carbon atom. Justify it.
iv - Write four features of a solvent used in crystallization.
v - What is crystallization? Give its basic principle.
vi - How coloured impurities are removed from a crystal?
vii - Why liquids are less common in universe than gases and solids?
viii - How Dalton's law is helpful in respiration?
ix - Derive Charle's law from Kinetic equation of gas.
x - Write relationship between Kc and Kp.
xi - What is ionic product constant of water? How do temperature affect it?
xii - State law of Mass action.

3. Write short answers to any EIGHT questions. (2 x 8 = 16)

i - Iodine dissolves readily in tetrachloromethane. Give reason.
ii - Define polarizability. Give its significance.
iii - Define unit cell. Name crystallographic elements.
iv - Boiling needs constant supply of heat. Explain with reason.
v - State any two properties of positive rays.
vi - What is line spectrum? Give any one example.
vii - State Moseley's Law.
viii - State Hund's Rule. Give an example.
ix - Define Catalysis. Give two examples.
x - What is specific rate constant? Explain
xi - Aqueous solution of CH_3COONa is basic in nature. Give reason.
xii - Define molality. Give its units.

4. Write short answers to any SIX questions. (2 x 6 = 12)

i - Why does lone-pair occupy more space than bonding pair?
ii - Radius of Cation is smaller than parent atom. Justify.
iii - How bond length is affected by change in hybridization state?
iv - Define electronegativity.
v - Define the term standard enthalpy of neutralization.
vi - What is state function? Give one example.
vii - Discuss endothermic reaction with example.
viii - Lead accumulator is chargeable battery. Justify.
ix - Calculate oxidation number of Phosphorous in Na_3PO_4.

(Turn Over)

SECTION – II

5. **(a)** What are limiting reactants? How are they identified? Give an example. **(2+1+1 =4)**

   (b) What are ionic solids? Give their three properties. **(4)**

6. **(a)** 250 cm^3 of Hydrogen gas is cooled from 127°C to –27°C by maintaining the pressure constant. Calculate the new volume of gas at low temperature. **(4)**

   (b) Write down measurement of $\frac{e}{m}$ by J.J. Thomson with diagram. **(4)**

7. **(a)** Explain formation of Oxygen molecule according to Molecular Orbital Theory. Also draw diagram and calculate bond order. **(4)**

   (b) What is the percentage ionization of acetic acid in solution in which 0.1 mol of it has been dissolved per dm^3 of the solution? **(4)**

8. **(a)** State 1st Law of Thermodynamics and prove $\Delta E = q_v$ **(4)**

   (b) Define electrochemical series. Discuss calculation of the voltage of cell by giving one example. **(4)**

9. **(a)** Define the following terms: **(4)**

   (i) Hydration (ii) Hydrates

   (iii) Mole fraction (iv) parts per million (ppm)

   (b) Discuss four factors that affect the rate of reactions. **(4)**