Roll No. of Candidate : _____

CHEMISTRY (Intermediate Part-I, Class 11th) 322 - (III) Paper I (Group – I)

Time: 20 Minutes **OBJECTIVE** ----- **Code : 6485** GUJ.G-22 **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. Attempt as many questions as given in objective type question paper and leave others blank.

1. 1 - An aqueous solution of ethanol in water may have vapour pressure _____ .
(A) equal to that of water (B) equal to that of ethanol
(C) more than that of water (D) less than that of water

2 - The unit of the rate constant is the same as that of the rate of reaction in _____ order.
(A) first (B) second (C) zero (D) third

3 - Amorphous solids _____ .
(A) have sharp melting points
(B) undergo clean cleavage when cut with knife
(C) have perfect arrangement of atoms
(D) can possess small regions of orderly arrangement of atoms

4 - In endothermic reactions, the heat content of the _____ .
(A) products is more than that of reactants (B) reactants is more than that of products
(C) surroundings increases (D) reactants and products is equal

5 - When 6d orbital is completed, the entering electron goes into _____ .
(A) 7f (B) 7s (C) 7p (D) 7d

6 - Orbitals having same energy are called _____ .
(A) hybrid orbitals (B) valence orbitals (C) degenerate orbitals (D) d-orbitals

7 - Solvent extraction is controlled by _____ .
(A) distribution law (B) Newton's law (C) law of mass action (D) Graham's law

8 - The mass of one mole of electrons is _____ .
(A) 1.008 mg (B) 0.55 mg (C) 0.184 mg (D) 1.673 mg

9 - VSEPR theory was developed by _____ .
(A) Sidgwick and Powell (B) Sidgwick and Nylholm
(C) Powell and Gillespie (D) Nylholm and Gillespie

10 - If the salt bridge is not used between two half cells, then the voltage _____ .
(A) decreases rapidly (B) decreases slowly (C) does not change (D) drops to zero

11 - An excess of aqueous silver nitrate is added to aqueous barium chloride and precipitate is removed by filtration. What are main ions in the filtrate?
(A) Ag^+ and NO_3^- only (B) Ag^+ and Ba^{+2} and NO_3^-
(C) Ba^{+2} and NO_3^- only (D) Ba^{+2} and NO_3^- and Cl^-

12 - A limiting reactant is the one which _____ .
(A) is taken in lesser quantity in gm as compared to other reactants
(B) is taken in lesser quantity in volume as compared to the other reactants
(C) gives the maximum amount of the product which is required
(D) gives the minimum amount of the product under consideration

13 - _____ is not used as drying agent in a desiccator.
(A) water (B) $CaCl_2$ (C) silica gel (D) phosphorus pentoxide

14 - BF_3 shows _____ hybridization.
(A) sp^2 (B) sp^3 (C) sp (D) sp^3d

15 - Equal masses of methane and oxygen are mixed in an empty container at $25^\circ C$. The fraction of total pressure exerted by oxygen is _____ .
(A) $\frac{1}{3}$ (B) $\frac{8}{9}$ (C) $\frac{1}{9}$ (D) $\frac{16}{17}$

16 - The deviation of a gas from ideal behaviour is maximum at _____ .
(A) $-10^\circ C$ and 5.0 atm (B) $-10^\circ C$ and 2.0 atm (C) $100^\circ C$ and 2.0 atm (D) $0^\circ C$ and 2.0 atm

17 - _____ is a pseudo solid.
(A) CaF_2 (B) glass (C) NaCl (D) sugar

CHEMISTRY (Intermediate Part-I, Class 11th) 322 Paper I (Group – I)

Time: 2:40 Hours SUBJECTIVE GUJG-22 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 - What is molecular ion? Write down formulas of any two of these ions.
ii - Differentiate between empirical and molecular formula.
iii - Mg (Magnesium) atom is twice heavier than C (Carbon) atom. Justify.
iv - How crystals are dried in vacuum desiccator?
v - What is R_f value? Why does it has no units?
vi - What is partition chromatography?
vii - Convert $-40\,^{\circ}C$ into Fahrenheit scale.
viii - Define absolute zero temperature.
ix - "Water vapours do not behave ideally at 273 K". Explain it.
x - What is Le-chatelier's principle?
xi - Define solubility product.
xii - Prove that $Ka = \frac{[H_3O^+][A^-]}{[HA]}$.

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

i - Boiling needs a constant supply of heat. Give reason.
ii - The vapour pressures of solids are far less than those of liquids. Why?
iii - Define symmetry. Give its elements.
iv - What are ionic solids? Give two examples.
v - Whichever gas is used in the discharge tube, the nature of cathode rays remains the same. Why?
vi - What is the origin of line spectrum?
vii - State Pauli's exclusion principle.
viii - Write down names of two spectral series alongwith their regions.
ix - The concentration in terms of molality is independent of temperature but molarity depends upon temperature . Why?
x - Define hydrolysis. Give an example.
xi - What is activated complex?
xii - What is half-life period? Give an example.

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

i - Write Lewis structures of i) CCl_4 ii) HCN
ii - Why Noble gases don't form chemical bonds?
iii - O_2 shows paramagnetic behavior; why?
iv - Why CH_4 does not form co-ordinate covalent bond but H_2O can form?
v - Is it true that non spontaneous process never happens in the universe?
vi - What does the symbol ΔH_n^o denote? Define this quantity.
vii - Burning of candle is spontaneous process; brief it.
viii - What is difference between primary and secondary cell?
ix - SHE acts as cathode when connected with zinc; why?

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(Turn Over)

(SECTION – II) GUJ-G1-22

Note: Attempt any THREE (3) questions from Section II..

5. (a) Define yield. How theoretical and practical yield can be calculated? **(1+3)**
   (b) Define quantum numbers. Explain azimuthal quantum number in detail. **(1+3)**

6. (a) Calculate the density of CH_4 (g) at $0^{\circ}C$ and 1 atm pressure. What happens to the density if the pressure is increased to 2 atm at $0^{\circ}C$? **(4)**
   (b) Explain the construction of lead accumulator. Give its discharging process. **(4)**

7. (a) Draw the molecular orbital diagram for O_2 and explain its paramagnetic behaviour. **(2+2)**
   (b) How the enthalpy of a reaction can be measured by using glass calorimeter? **(3+1)**

8. (a) What are London forces? Write down factors affecting them. **(1+3)**
   (b) Calculate the pH of a buffer solution in which 0.11 molar CH_3COONa and 0.09 molar acetic acid solution are present. K_a for CH_3COOH is 1.85×10^{-5}. **(1+1+1+1)**

9. (a) Differentiate between **(2+2)**
      i) Ideal and non-ideal solutions.
      ii) Hydration and hydrolysis
   (b) Define catalysis. Explain its types with suitable examples. **(1+3)**