SGD-11-G1-P1

1123 **Warning:- Please write your Roll No. in the space provided and sign** **Roll No----------**

(Inter Part – I) **(Session 2019-21 to 2022-24)** **Sig. of Student ----------**

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

Time Allowed:- 20 minutes **PAPER CODE 2481** 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 volume occupied by 1.4 g of N_2 at S.T.P. is
(A) 1.12 dm^3 (B) 2.24 dm^3 (C) 22.4 dm^3 (D) 112 cm^3

2) Which of the following is a monoisotopic element.
(A) Silver (B) Calcium (C) Chlorine (D) Fluorine

3) Which of the following can be sublime.
(A) Calcium (B) NaCl (C) Naphthalene (D) Na_2CO_3

4) Constant factor in charlie's law.
(A) Volume (B) Pressure (C) Tempreture (D) Both V and T

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

6) Which of the following is amorphous solid
(A) NaCl (B) Glass (C) NaBr (D) CaF_2

7) Which of the following has highest vapour pressure at 25°C.
(A) Mercury (B) Ethanol (C) $CC\ell_4$ (D) Chloroform

8) When 6d orbital is complete the entering electron goes into
(A) 7f (B) 7s (C) 7d (D) 7p

9) Number of bonds in nitrogen molecule is
(A) One σ and one π (B) Three sigma (C) Two sigma and one π (D) One σ and Two π

10) Units of energy in which heat changes in S.I system are.
(A) Joule (B) Torr (C) Erg (D) Newton

11) The net heat change in a chemical reaction is same weather the reaction completes in one step or several steps. It is known as
(A) Henry's law (B) Joule's principle (C) Hesse's law (D) Law of conservation of energy

12) Mixture of NH_4OH and NH_4Cl makes a buffer whose pH is
(A) less than seven (B) 7 (C) More than seven (D) 4

13) For the reaction $N_2+3H_2 \rightleftharpoons 2NH_3$, The pressure at optimum condition is.
(A) 100 atm (B) 600 atm (C) 200-300 atm (D) 1000 atm

14) Molarity of pure water is.
(A) 01 (B) 55.5 (C) 18 (D) 8

15) If a strip of Cu metal is placed in a solution of $FeSO_4$
(A) Cu will be deposited (B) Fe is precipitated out (C) Cu and Fe both dissolved (D) No reaction takes place

16) Oxidation number of Mn in $KMnO_4$ is
(A) +5 (B) +7 (C) +3 (D) +2

17) The unit of rate constant is the same as that of the rate of reaction in
(A) First order reaction (B) Second order reaction (C) Zero order reaction (D) Third order reaction

1123 (Inter Part - I) **Warning**:- Please, do not write anything on this question paper except your **Roll No.**

Chemistry (Subjective) **(Session 2019-21 to 2022-24) Group (I) Paper (I)**

Time Allowed: 2.40 hours **Section ---------- I** **Maximum Marks: 68**

2. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) N_2 and CO have the same number of electrons, protons and neutrons.

(ii) 'Mg' atom is twice heavier than that of carbon atom.

(iii) How can the efficiency of a chemical reaction can be expressed?

(iv) List the four postulates of Kinetic molecular theory of gases.

(v) What are characteristics of plasma? **(vi)** Throw some Light on the factor $\frac{1}{273}$ in charle's Law.

(vii) The e/m value of positive rays for different gases are different but those for cathode rays the e/m values is the same. Justify it. **(viii)** What are the defects of Bohr's atomic model.

(ix) Compare line emission and line absorption spectra. **(x)** What is a spontaneous process? Give examples

(xi) Why is it necessary to mention the physical states of reactant and products in a thermochemical equation? **(xii)** Define state and state function's with one example for each.

3. Answer briefly any Eight parts from the followings:- **8 × 2 = 16**

(i) What is parts per million. Write its formula?

(ii) What are the conditions should be fullfiled to observe colligative properties.

(iii) Define hydrates. Give example. **(iv)** What is activation of catalyst. Give one example?

(v) How surface area has effect on the rate of reaction? **(vi)** Catalyst are specific in their action.

(vii) Why sintered glass crucible is better than gouch crucible?

(viii) Write down major steps involved in complete quantitative analysis.

(ix) How mixture of sand and naphthalene can be separated?

(x) Earthenware vessel keep water cool. Justify. **(xi)** Define symmetry. What are symmetry elements.

(xii) Ionic solids are highly brittle in nature.

4. Answer briefly any Six parts from the followings:- **6 × 2 = 12**

(i) Define Bond Energy? **(ii)** A Salt Bridge maintains the electrical neutrality in the cell. Justify it.

(iii) Why cationic radius is smaller than atomic radius?

(iv) Why 2nd Ionization Energy is always greater than first Ionization Energy?

(v) What is pK_b? Give its significance. **(vi)** Define pH?

(vii) What does mean by chemical Equilibrium?

(viii) What is oxidation number? Give example. **(ix)** Define Electrolysis.

Section -------- II **Note: Attempt any three questions.** **(8 × 3 = 24)**

5. (a) Describe combustion analysis for the determination of percentage of C, H and O in an organic compound.

(b) Calculate the mass of 1 dm^3 of NH_3 gas at 30°C and 1000 mm Hg pressure, considering that NH_3 is behaving ideally.

6. (a) Describe Manometric method for determination of vapour pressure of a liquid with a diagram.

(b) What is Enthalpy of a reaction? How ΔH of a reaction is measured in Laboratory by glass calorimeter?

7. (a) Explain Heisenberg uncertainity principle.

(b) The solubility product of Ag_2CrO_4 is 2.6×10^{-2} at 25°C. Calculate the solubility of compound. Atomic mass of Ag=108 Cr=52 O=16.

8. (a) What is orbital hybridization? Explain the structure of CH_4 molecule on the basis of hybridization theory.

(b) Describe the construction and working of standard hydrogen electrode (SHE).

9. (a) Explain continuous and discontinuous solubility curves. **(b)** Describe energy of activation in detail.