Roll No _____ to be filled in by the candidate

HSSC-(P-I)-A/2023

Paper Code	6	4	8	6

(For All Sessions)

Rwp-11-2-23

Chemistry (Objective)

Group-II

Time: 20 Minutes Marks : 17

Note: Write Answers to the Questions on the objective answer sheet provided. Four possible answers A, B, C and D to each question are given. Which answer you consider correct, fill the corresponding circle A, B, C or D given in front of each question with Marker or Pen ink on the answer sheet provided.

1.1 The PH of tomato is: (A) 12 (B) 4.2 (C) 7.2 (D) 9.2

2. For which system does the equilibrium constant Kc has unit 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. 18 g glucose is dissolved in 90g of water. The relative lowering of vapor pressure is equal to:

(A) $^1/_5$ (B) 5.1 (C) $^1/_{51}$ (D) 6

4. The oxidation number of chromium in $K_2Cr_2O_7$ is:

(A) 4 (B) 2 (C) 6 (D) 3

5. Stronger is the oxadizing agent greater is the:

(A) Oxidation potential (B) Reduction potential (C) Redox potential (D) E.M.F of cell

6. 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

7. 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) $5.8\ g\ of\ N_2O_5$

8. One mole of SO_2 contains:

(A) 6.02×10^{23} atoms of oxygen (B) 18.1×10^{23} molecules of SO_2 (C) 6.02×10^{23} atoms of sulphur (D) 4 grams atoms of SO_2

9. The rate of filtration can be increased by using:

(A) Desicator (B) Suction flask (C) Cold finger (D) Chromatographic tank

10. Which of the following will have the same no of molecules at STP?

(A) $11.2\ dm^3$ and $32\ g\ of\ O_2$ (B) $280\ cm^3$ of CO_2 and $280 cm^3\ of\ N_2O$ (C) $44\ g\ of\ CO_2$ and $11.2\ dm^3$ of oxygen (D) $280\ g\ of\ N_2$ and $5.6\ dm^3$ of oxygen

11. Normal human body temperature is:

(A) 37^0C (B) 98.6^0C (C) 37^0F (D) 273 K

12. Which of the following is a pseudo solid: (A) CaF_2 (B) Glass (C) NaCl (D) NaOH

13. Hydrogen bonding is maximum in: (A) HI (B) HBr (C) HCl (D) HF

14. The velocity of photon is:

(A) Independent of its wave length (B) Depends on its wave length (C) Equal to square of its amplitude (D) Depends on its source.

15. Which of the following molecule have zero dipole moment:

(A) NH_3 (B) $CHCl_3$ (C) H_2O (D) BF_3

16. Calories is equal to: (A) 0.4184 J (B) 41.84 J (C) 4.184 J (D) 418.4 J

17. Spontaneous reactions are:

(A) Reversible (B) Irreversible (C) No irreversible (D) None of these

*Roll No _____ to be filled in by the candidate | HSSC-(P-I)-A/2023 (For All Sessions) | Marks : 68

Chemistry (Subjective) | GROUP-II | Time: 2:40 hours

Rwp-11-2-23

SECTION-I

2. **Write short answers of any eight parts from the following:** (8x2=16)

i. Enlist different methods for separation of Isotopes.
ii. What is meant by internal energy?
iii. Give the contribution of J.Berzelius towards chemistry.
iv. Distinguish between diffusion and effusion of gases.
v. State Chale's law also write its mathematical formula.
vi. Enlist two characteristics of plasma.
vii. State Heisenberg's uncertainty principle and give its formula.
viii. Define system with an example.
ix. Define Pauli's exclusion principle. Give an example.
x. What is thermo chemistry?
xi. Calculate the mass of electrons from the value of charge and e/m.
xii. How molecular ions one generated? Name methods of generation.

3. **Write short answers of any eight parts from the following:** (8x2=16)

i. Define solution give an example.
ii. What is ppm? Give its mathematical formula.
iii. Define colligative properties of solutions.
iv. What is meant by auto catalysis?
v. What are enzymes? Give an example.
vi. Radioactive decay is always a first order reaction. Why?
vii. State partition law.
viii. Define partition chromatography.
ix. How crystals can be decolorized?
x. HF is weaker acid than HCl. Why?
xi. Define polymorphism. Give an example.
xii. Ionic crystals are highly brittle. Why?

4. **Write short answers of any six parts from the following:** (6x2=12)

i. Write two points of Valence Shell Electron Pair Repulsion theory (VSEPR).
ii. Why the lone pairs of electrons on an atom occupy more space?
iii. Define bond order. Give one example.
iv. Give statement of Lechatlier's principle.
v. Define pH with mathematical expression.
vi. What is common ion effect? Give two examples.
vii. Impare "Cu" can be purified by electrolytic process.
viii. A porous plate on a salt bridge is not required in load storage cell.
ix. SHE acts as anode when connected with the "Cu" electrode but as eathode with "Zn" electode.

SECTION-II

Note **Attempt any three questions. Each question carries equal marks:** (8x3=24)

5. (a) Write down the steps involved for the determination of emphirical formula. 4

(b) 250 cm^3 of sample of hydrogen effuses four times as rapidly as an unknown gas. Calculate molar mass of unknown gas. 4

6. (a) Explain following types of Inter Molecular forces at least with one example each:

(ii) Dipole-Dipole forces (ii) Dipole –Induced Dipole forces 2+2

(b) Explain Born-Haber cycle in detail: 4

7. (a) Give four defects of Bohr's atomic model 1x4=4

(b) The solubility of P_bF_2 at 25^0C is $0.64\ gdm^{-3}$. Calculate Ksp of P_bF_2 $(At\ mass\ of\ P_b = 207,\ F = 19)$ 4

8. (a) Explain atomic orbital hybridization with reference to the structure of C_2H_2 and C_2H_4 2+2

(b) Write comprehensive note on lead accumulator with its discharging and recharging process. 2+2

9. (a) Give three statements of Roult's law with equations. 4

(b) How order of reaction is measured using half-life method and method of large excess? 4