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Inter - (Part-I)-A-2022

Roll No._____ to be filled in by the candidate

(For All Sessions)

Group - I

Paper Code	6	4	8	3

Chemistry (Objective Type)

RwP-Gr-22

Time:20 Minutes **Marks:17**

NOTE: Write answers to the questions on objective answer sheet provided. Four possible answers A, B, C & 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. Amorphous solids:
(A) Have shape melting point
(B) Under go clean cleavage when cut with knife
(C) Have perfect arrangement of atoms
(D) Have small region of orderly arrangement of atom

2. The value of charge on electron is:
(A) 2.602×10^{-19} Coulombs (B) 1.602×10^{19} Coulombs (C) 1.6023×10^{-19} Coulombs (D) 1.602×10^{-19} Kg

3. Quantum number value for 2S orbitals are:
(A) $n=2,\ l=1$ (B) $n=1,\ l=2$ (C) $n=1,\ l=o$ (D) $n=2,\ l=o$

4. Which of the following species has unpaired electrons in the antibonding bonding molecular orbitals?
(A) O_2^{-2} (B) N_2^{2-} (C) B_2 (D) F_2

5. Geometry of H_2O on the basis of VSEPR theory.
(A) Linear (B) Trigonal planer (C) Tetrahedral (D) Bent

6. The net heat change in a chemical reaction is same, whether it is brought about in two or different ways in one or several steps. It is known as.
(A) Henry law
(B) Joul's law
(C) Hess's law
(D) Law of conservation of energy

7. For which system, does the equilibrium constant Ice has no units.
(A) $N_2+3H_2 \rightleftharpoons 2NH_3$ (B) $H_2+I_2 \rightleftharpoons 2HI$ (C) $2No_2 \rightleftharpoons N_2O_4$ (D) None of these

8. Colligative properties are the properties of:
(A) Dil solution which behave as nearly ideal solutions
(B) Concentrated solution which behave as nearly non-ideal solution
(C) Both (A) and (B)
(D) None of there

9. If the salt bridge is not used between half cells, then the voltage.
(A) Decrease rapidly (B) Decrease slowly (C) Does not change (D) Drops to Zero

10. If the equation at reaction $2A+B \rightarrow Product$
$rate = K[A]^2[B]$
A is present in large excess, then order of reaction is.
(A) 1 (B) 2 (C) 3 (D) 4

11. One mole of So_2 contain:
(A) 6.02×10^{23} atoms of oxygen
(B) 1.81×10^{23} molecule of So_2
(C) 6.02×10^{23} atoms of Sulphur
(D) 4 gram atoms of So_2

12. A limiting reactant is one which is:
(A) Taken is small amount in gram as compared to other reactant
(B) Taken in lesser amount in volume as compared to other reactant.
(C) Give the maximum amount of product
(D) Give minimum amount of product

13. A filtration process could be very time consuming if it were not aided by suction which is developed:
(A) If the paper covers the funnel up to the circumference
(B) If the paper has got small sized pores in it
(C) If the stem at the funnel in large so that it dips into the filtrate
(D) If the paper fits tightly

14. Solvent extraction is an equilibrium process and is controlled by.
(A) Law of Mass action
(B) Amount of solvent used
(C) Partition law
(D) Amount of solute

15. Pressure remain constant, at which temperature the volume of gas will become twice of what it is at 0°C.
(A) 546°C (B) 200°C (C) 546 K (D) 273 K

16. The order of 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) $NH_3 > Co_2 > Cl_2 > So_2$

17. In order to raise the building point at H_2O up to 110°C, the external pressure should be.
(A) Between 760 torr and 1200 torr
(B) Between 200 torr and 760 torr
(C) 576 torr
(D) At any pressure

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(For All Sessions)

Group - I

Chemistry (Essay Type)

Time: 2:40 Hours

Section - I

Marks:68

2- Write short answers of any eight parts from the following. 2 x 8 = 16

i. How molecular ions are formed? Give example.

ii. Define Mole and Avogadro's Number.

iii. What is percentage yield? Write its formula.

iv. Write down two phases of chromatography.

v. Define solvent extraction.

vi. Why fluted filter paper in more useful than ordinary filter paper for filtration?

vii. Convert 30° centigrade into Fahrenheit scale.

viii. What is Joule Thomson effect?

ix. Write down any two applications of plasma.

x. Calculate PH of 10^{-4} mole dm^{-3} of Hcl solution.

xi. What are the optimum conditions of temperature and pressure to get maximum yield of ammonia? $N_2 + 3H_2 \rightleftharpoons 2NH_3 + 92.46Kj$

xii. State Le-chatelier's principle.

3- Write short answers of any eight parts from the following. 2 x 8 = 16

i. What do you mean by Habit of a crystal? Give an example.

ii. Define molar heat of vaporization and Molar heat of sublimation.

iii. Boiling points of halogens increase down the group. Give the reason.

iv. Ice floats on water. Give the reason.

v. What do you mean by Line Spectrum?

vi. What is $n+l$ rule? Give an example.

vii. Why is the e/m value for positive rays obtained from hydrogen gas 1836 times less than that of cathode rays?

viii. State Heisen berg's Uncertainty Principle. Also write its mathematical form.

ix. What are conjugate solutions? Give an example.

x. What are hydrates? How are they formed?

xi. What is auto-catalysis? Give an example.

xii. A catalyst is specific in its action. Give one example to prove it.

4- Write short answers of any six parts from the following. 2 x 6 = 12

i. Bond distance is the compromised distance between two atoms.

ii. π bonds are more diffused than sigma bonds. Justify it.

iii. What are bonding and antibonding molecular orbitals? Give examples.

iv. Define non polar covalent bond. Give examples.

v. Define a spontaneous reaction.

vi. Why the temperature of the system changes during exothermic and endothermic reactions.

vii. Burning of Candle is a spontaneous process. Justify it.

viii. A salt bridge maintains the electrical neutrality in the cell. Give reasons.

ix. Write anodic reaction in alkaline battery.

Section - II

8 x 3 = 24

NOTE: Answer any three questions from the following.

5.(a) What is the difference between actual yield and theoretical yield? Why actual yield is less than the theoretical yield.

(b) What is spectrum? Explain Atomic Emission and Atomic absorption spectrum. 04+04

6.(a) 250 Cm^3 of hydrogen is cooled from 127°C to -27° by maintaining the pressure constant. Calculate the new volume of the gas at this low temperature.

(b) Define electrochemical series. Discuss calculation of the voltage of cell, giving one example. 04+04

7.(a) Explain structure of water and boron trifluoride by hybridization.

(b) Explain measurement of enthalpy of a reaction by glass calorilmeter. 04+04

8.(a) How is the vapour pressure of a liquid measured using Manometric method?

(b) The solubility of PbF_2 at 25°C is 0.64gdm^{-3}. Calculate Ksp of PbF_2. 04+04

9.(a) Explain Beckmann method to determine depression of Freezing point.

(b) How order of reaction can be measured by half life method. 04+04