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CLASS XI- HALF YEARLY REVISION QS- 2015-16.

CHEMISTRY

- 1) Why does ionization enthalpy increases from left to right in a group?
- 2) Draw the electron dot structure for CH₄, NH₃, SO₂, SO₃, H₂O
- 3) Write the ideal gas, boyle's, Daltons, Vanderwaal's equation.
- 4) Write the mathematical expression for the first law of thermodynamics, enthalpy, entropy, gibbs free energy
- 5) State : Aufbau's, Paulis', Hunds, Lechatleir's principle
- 6) Calculate the amount of KOH, Na₂CO₃, C₂H₂O₄.2H₂O in grams that is required to obtain of 500ml of 2.5 M solution.
- 7) I) Which one Cr⁺²/Cr⁺³ and Fe⁺²/Fe⁺³ is more paramagnetic and why?
II) What are the values of n and l for 2s, 4f, 5d, 4p, 3d orbital
- 8) What will be the minimum pressure required to compress 700dm³ of air at 5 bar to 400dm³ at 50°C?
- 9) A) What will be sign of entropy for the change of liquid into its vapour?
B) Define standard enthalpy of(fusion, solution, formation).
- 10) a) What is equilibrium constant, degree of dissociation, ionic product of water?
b) What are common ion effect, buffer solutions give examples.
- 11) Calculate the empirical formula of a compound whose percentage composition C is 21.9%, H is 4.6%, and Br is 73.4%.
- 12) a) Define excess reagent, limiting reagent.
b) Calculate the mole fraction of each components in 20% of ethylene glycol(C₂H₆O₂) in water.
- 13) a) State Heisenberg's uncertainty principle
b) Calculate the mass of photon with the wave length 7.6nm.

14) a) What would be IUPAC name and symbol of an element with atomic number 112,105, 119,117,109.

b) Arrange the following ions with the reason in the order of decreasing ionic radii: Al^{+3} , B^{+2} , Li^{+2} , He^{+} , Be^{+3}

15) State the modern periodic table, Mendeleev's periodic table? What are the merits and demerits of modern periodic table?

16) Define and explain the types of ionic, covalent, dative, hydrogen bond. Compare its strength with van der Waals force of attraction.

17) Draw the structure of the following compounds with the name of the geometry using VSEPR theory: H_2O , SO_2 , BrF_3 , C_2H_6 , SF_4 , NH_3

18) What are the main postulates of Bohr's model, Rutherford's model, Kinetic molecular theory?

(OR)

Reason out: a) Water, oil have spherical shape. Why?

b) The old window sills/pans are thicker at the bottom than at the top. Why?

c) Why HI is more acidic than HF? and compare the hydrides along the period in terms of increasing order of acidic and basic strength.

19) What is internal energy and Gibbs free energy

20) a) Prove: $C_p - C_v = R$. $K_p = K_c (RT)^{\Delta n}$

b) For the reaction $2\text{A}(\text{g}) + \text{B}(\text{g}) \rightleftharpoons 2\text{D}(\text{g})$

ΔU° is -70.5 kJ find the ΔH° and 576 K temperature. (Given 8.314 J/K/mol)

21) The combustion of 1 mole of benzene takes place at 298 K , 1 atm after combustion $\text{CO}_2(\text{g})$ and $\text{H}_2\text{O}(\text{l})$ are produced and 5674.0 kJ of heat is liberated.

Calculate the standard enthalpy of formation of C_6H_6 if ΔH° of $CO_2(g)$, $H_2O(l)$ are -393.5, -285.8 KJ/mol respectively.

22) a) State Lewis concept, Lowry Bronsted, Arrhenius concept of acid and base. Write the conjugate acid base pair for NH_2^- , HCO_3^-

23) First breakthrough of classification of elements was provided by Mendeleev, he arranged the then known elements in order of their increasing atomic weights grouping together elements with similar properties and leaving out blank space for unknown elements, read the above passage and answer the questions

a) What values were expressed by Mendeleev?

b) Name two elements for the blank spaces were left out.

c) Give two major drawbacks of Mendeleev's periodic table.

24) a) What is the wavelength of light emitted when electron in the hydrogen atom undergoes transition from an energy level $n=4$ to energy level $n=2$.

b) Write the Electronic configuration of Fe, Sc+1, V+4, Cu and Cr, Why does it show anomaly?

(OR)

a) Explain the Black body radiation, Franck's rule, photoelectric effect

b) Neon gas is generally used in sign boards if it emits light strongly at 720\AA . Calculate frequency of emission, distance travelled by their radiation in 80 seconds.

25) a) Define the hybridisation and explain shape of C_2H_6 , C_2H_2 , PCl_5 (OR) SF_6 using Valence Bond theory

b) Give reasons for the following: Water molecule has bent structure whereas CO_2 molecule is linear.

(OR)

- a) What is polarity, electronegativity, electron affinity, dipole moment?
Compare the dipole moment of CO₂ and H₂O
- b) Draw the energy level diagram for O₂, O₂⁺ (OR) N₂, N₂⁺ using molecular orbital theory.

26) a) The solubility product of PbCl₂ is found to be 1.4×10^{-4} at a temperature equal to the boiling point of water. Calculate the solubility of PbCl₂ at that temperature.

b) Calculate the pH of the solution of KOH, NaOH with 0.006 M.

(OR)

- a) Derive $\Delta G = -T\Delta S$, $\Delta H^\circ = \Delta U^\circ + P\Delta V$ and state standard state conditions
- b) What is effect of
- addition of H₂
 - addition of HI and NH₃ the equilibrium reaction
 - the temperature is increased to 200k

