

## SECOND REVISION EXAMINATION - 2023

1103

STD - XI

TIME : 3.00 Hrs

## CHEMISTRY

MARKS : 70

## PART - I

I. Answer all the questions :

15 x 1 = 15

- The relative molecular mass of glucose is .....  
 a) 18.0096 u      b) 1800.96 u      c) 180.096 u      d) 18009.6 u
- Which of the following pairs of d-orbitals will have electron density along the axes?  
 a)  $d_{xy}, d_{x^2-y^2}$        b)  $d_{z^2}, d_{x^2-y^2}$       c)  $d_{xy}, d_{yz}$       d)  $d_{z^2}, d_{x^2}$
- Which of the following pairs of elements does not exhibit diagonal relationship?  
 a) Li and Mg      b) Be and Al      c) B and Si      d) Be and Mg
- The hardness of water can be determined by volumetrically using the reagent.  
 a) Sodium thio sulphate      b) Potassium permanganate      c) hydrogen peroxide       d) EDTA
- In which phase,  $\text{BeCl}_2$  tends to form a chloro-bridged dimer structure.  
 a) solid state      b) vapour state      c) Liquid state       d) High temperature
- Compressibility factor for  $\text{CO}_2$  at 400k and 71.0 bar is 0.8697. The molar volume of  $\text{CO}_2$  under these conditions is  
 a) 22.04  $\text{dm}^3$       b) 2.24  $\text{dm}^3$        c) 0.41  $\text{dm}^3$       d) 19.5  $\text{dm}^3$
- Among the following which is the path function?  
 a) Internal Energy      b) Gibb's free energy      c) Enthalpy      d) Work
- $K_c / K_p$  for the reaction,  $\text{N}_{2(g)} + 3\text{H}_{2(g)} \rightleftharpoons 2\text{NH}_{3(g)}$   
 a)  $\frac{1}{RT}$       b)  $\sqrt{RT}$       c) RT       d)  $(RT)^2$
- Which of the following is correct for Non-Ideal solution?  
 a)  $\Delta H_{\text{mix}} = 0 ; \Delta V_{\text{mix}} = 0$       b)  $\Delta H_{\text{mix}} \neq 0 ; \Delta V_{\text{mix}} = 0$       c)  $\Delta H_{\text{mix}} \neq 0 ; \Delta V_{\text{mix}} \neq 0$       d)  $\Delta H_{\text{mix}} = 0 ; \Delta V_{\text{mix}} \neq 0$
- Match the following :  

1) KCl	-	(i) Triple covalent bond
2) $[\text{Fe}(\text{CN})_6]^{4-}$	-	(ii) Electron deficient molecule
3) $\text{BF}_3$ molecule	-	(iii) Co-ordinate covalent bond
4) $\text{N}_2$ molecule	-	(iv) Electrovalent bond

  
 a) (1) - (iv) (2) - (ii) (3) - (i) (4) - (iii)       b) (1) - (iv) (2) - (iii) (3) - (ii) (4) - (i)  
 c) (1) - (iii) (2) - (iv) (3) - (i) (4) - (ii)       d) (1) - (iii) (2) - (i) (3) - (ii) (4) - (iv)
- Lassaigue's test for the detection of nitrogen falls in  
 a)  $\text{NH}_2 - \text{NH}_2 \cdot \text{HCl}$        b)  $\text{C}_2\text{H}_5 - \text{CoNH}_2$       c)  $\text{C}_6\text{H}_5 - \text{NH} - \text{NH}_2 \cdot \text{HCl}$       d)  $\text{NH}_2 - \text{CO} - \text{NH} \cdot \text{NH}_2 \cdot \text{HCl}$
- Hyper conjugation is also known as .....  
 a) Baker - nathan effect      b) no bond resonance      c) both (a) and (b)      d) None of these
- Which among the following alkenes on reductive ozonolysis produces only propanone?  
 a) 2 - Methyl propene      b) 2 - Methyl but-2-ene  
 c) 2, 3 - dimethyl but-1-ene       d) 2,3 - dimethyl but-2-ene
- The conversion of chloro benzene from benzene is called.....  
 a) Sandmeyer reaction       b) Dow's process      c) Williamson's Ether synthesis      d) Raschig process
- Biochemical oxygen demand value less than 5 ppm indicates a water sample to be .....

- ✓ a) highly poluted      b) low COD      c) poor in dissolved oxygen      d) rich in dissolved oxygen

## PART - II

II. Answer any six questions. Q.No.24 is compulsory

6 x 2 = 12

- ✓ 16. What is meant by limiting reagents?  
 ✓ 17. State Pauli's exclusion principle.  
 ✓ 18. Give the systematic names of the following. (i) Trona (ii) Caustic potash  
 19. Define Hess's law of Constant Heat of Summation.  
 20. What is the effect of added Inert gas on the reaction at equilibrium?  
 21. How do you detect the presence of nitrogen and sulphur together in an organic compound?  
 22. Write short notes on Swarts reaction.  
 23. From where does ozone come in the photo chemical smog?  
 24. A litre of sea water weighing about 1.05kg contains 5mg of dissolved oxygen. Express the concentration of dissolved oxygen in ppm.

## PART - III

Answer any six questions. Q.No.33 is compulsory

6 x 3 = 18

25. Explain diagonal relationship with an example.  
 26. Arrange  $\text{NH}_3$ ,  $\text{H}_2\text{O}$  and  $\text{HF}$  in the order of increasing magnitude of hydrogen bonding and explain the basis for your arrangement.  
 27. State and Explain Dalton's law of partial pressures.  
 28. Give the shapes of molecules predicted by VSEPR Theory. i)  $\text{NH}_3$  ii)  $\text{BrF}_5$  iii)  $\text{H}_2\text{O}$   
 ✓ 29. Differentiate between Nucleophiles and Electrophiles.  
 30. What happens when Ethylene is passed through cold dilute alkaline  $\text{KMnO}_4$  solution?  
 31. Write a note on Balz-Schiemann reaction.  
 32. What are degradable and Non-degradable pollutants?  
 ✓ 33. Give an example for each of the following type of organic compounds. i) Benzenoid Aromatic compound  
 ✓ ii) Aromatic Heterocyclic compound, iii) Unsaturated open chain compound

## PART - IV

Answer all the questions.

5 x 5 = 25

34. a) ✓ i) Calculate the empirical and Molecular formula of a compound containing 76.6% carbon, 6.38% Hydrogen and rest oxygen its vapour density is 47. (3)  
 ✓ ii) What are the n and l values for  $3p_x$  and  $4d_{x^2-y^2}$  electron? (2) (OR)  
 b) Describe the Pauling method for the determination of ionic radii.  
 35. a) (i) Explain the exchange reactions of deuterium. (3)  
 (ii) How is washing soda prepared by Solvay process? (2) (OR)  
 ✓ b) Derive the relationship between  $\Delta H$  and  $\Delta V$  for an ideal gas.  
 36. ✓ a) (i) State Le-Chatelier's principle (2)  
 (ii) Write a note on the effect of Temperature on the formation of  $\text{NH}_3$ . (3) (OR)  
 ✓ b) Explain the formation of  $\text{N}_2$  molecule by MO Theory.  
 37. a) (i) How do you calculate molar mass of the solute from osmotic pressure? (3)  
 (ii) What is meant by optical isomerism? (2) (OR)  
 b) (i) Explain positive mesomeric effect with an example. (3)  
 (ii) How will you convert 2-butyne into cis-2-butene. (2)  
 38. a) (i) Discuss the mechanism of  $\text{S}_\text{N}1$  reaction. (3)  
 (ii) Write short notes on Darzens process. (2) (OR)  
 b) (i) What are algae bloom. (2)  
 (ii) Write short notes on the following. (3) a) Wurtz - Fittig reaction b) Birch Reduction

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