FULL PORTION EXAMINATION – Feb -2016

Reg.No. ☐☐☐☐☐☐

PART – III (CHEMISTRY)

[Standard: XII]   **[English Version]**   **[Date: /   /   ]**

[Time Allowed: 3 hours]   **[Maximum Marks: 150]**

Instructions: *(i) Check the question paper for fairness of printing. If there is any **lack of Fairness**, inform the Hall Supervisor immediately.*

*(ii) Use **Black or Blue ink** to write and **pencil to draw diagrams**.*

Note: *(i) Draw **diagrams** and write **equations** wherever necessary.*

PART-I

Note: *(i) Answer **all** the questions.*   **(30 x 1=30)**

*(ii) **Choose** and write the **correct answer**.*

1. $E_n = -313.6/n^2$, If the value of $E_i = -34.84$ to which value n corresponds to

  a) 4   b) 3   c) 2   d) 1

2. The hybridization in SO_4^{2-} ion is _____

  a) sp^3 b)sp^3d^2 c)sp^3d d)sp^3d^3

3. Noble gases have _____ electron affinity

  a) High   b) Low   c) Zero   d) Very low

4. The shape of XeF_4 is

  a) Tetrahedral   b) Octahedral   c) Square planar   d) linear

5. Copper is extracted from

  a) Cuprite   b) Copper glance   c) Malachite   d) Copper Pyrites

6. which is used for armour plates

  a) chrome steel   b) chrome nickel steel

  c) chrome vanadium steel   d) both (a) & (b)

7. The most common oxidation state of Lanthanides is

  a) +2   b) +1   c) +3   d) +4

8. _____ is used in gas lamp material

  a) MnO_2 b) CeO_2 c) N_2O_5 d) Fe_2O_3

9. An example of a chelating ligand is

  a) NO^{2-} b) Chloro   c) Bromo   d) en

10. Which of the following is used as neutron absorber in nuclear reactors?

  a) Water   b) Deuterium   c) Uranium   d) Cadmium

11. The number of chloride ions present per unit of CsCl

  a) 6   b) 8   c) 1   d) 4

12. If a system absorbs reversibly 600 J of heat and performs 250 J of work, the increase in internal energy of the system is

  a) 850 J   b) 350 J   c) 250 J   d) 100 J

13. When a liquid boils, there is

  a) An increase in entropy   b) a decrease in entropy

  c) An increase in heat of vaporization   d) an increase in free energy

14. State of Chemical equilibrium is

  a) Dynamic   b) Stationary   c) Both a&b   d) None

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15. The Equilibrium constant for the reaction $2A \rightleftharpoons B$ is 25 mol^{-1} dm^3 at 900K. What is the equilibrium constant for the reaction $B \rightleftharpoons 2A$ in $dm^{-3}mol$ at the same temperature?

    a) 25   b) 625   c) 0.04   d) 0.4

16. The unit of zero order rate constant is

    a) sec^{-1} b) $mol\ lit^{-1}\ sec^{-1}$ c) $lit\ mol^{-1}\ sec^{-1}$ d) $lit^2\ mol^{-2}\ sec^{-1}$

17. Oil soluble dye is mixed with emulsion and emulsion remains colorless then, the emulsion is

    a) O/W   b) W/O   c) O/O   d) W / W

18. Smoke is a colloidal solution of ------- compounds.

    a) C,Ar   b) C,Si   c) C,Al   d) C,As

19. Medicine used as an eye lotion is _____

    a) Silver sol   b) colloidal gold

    c) colloidal antimony   d) milk of magnesia

20. Ostwald's dilution law is applicable to the solution of

    a) CH_3COOH b) NaCl   c) NaOH   d) H_2SO_4

21. The reaction of Lucas reagent is fast with

    a) Ethanol   b) methanol   c) 2-propanol   d) 2-methyl 2-propanol

22. The number of ether isomers possible for $C_4H_{10}O$ is_____

    a) 7   b) 5   c) 4   d) 3

23. When ether is exposed to air for some time an explosive substance produced is

    a) Peroxide   b) Oxide   c) TNT   d) Superoxide

24. The compound that does not undergo Cannizzaro reaction is

    a) Formaldehyde   b) Acetaldehyde   c) Benzaldehyde   d) Trimethyl Acetaldehyde

25. Which of the following is least acidic?

    a) C_2H_5OH b) CH_3COOH c) C_6H_5OH d) $ClCH_2COOH$

26. Nitration of nitrobenzene results in

    a) O-dinitro benzene   b) 1,3,5-trinitro benzene

    c) p-dinitrobenzene   d) m-dinitrobenzene

27. Primary amine acts as

    a) Electrophile   b) Lewis base   c) Lewis acid   d) Free radical

28. Which of the following will not undergo diazotization?

    a) m-toluidine   b) aniline   c) p-amino phenol   d) benzylamine

29. The amino acid without chiral carbon is

    a) Glycine   b) Alanine   c) Proline   d) Thyrosine

30. A peptide bond coming from 'n' amino acid has a number of peptide bond is

    a) n   b) n^2 c) (n-1)   d) (2n-1)

PART-II

Note: *(i) Answer **any fifteen** questions.*   **(15 x 3=45)**

                *(ii) Each answer should be in **one or two sentences**.*

31. State Heinsenberg's uncertainty principle?.

32. Electron affinity of fluorine is less than that of chlorine why?.

33. What is plumbo solvancy?

34. Give the uses of neon.

35. Why transition elements form complexes?

36. Write a note on chrome plating?

37. The decay constant for $_6C^{14}$ is 2.31×10^{-4} year^{-1}. Calculate half-life period.

38. What are super conductors?

39. Calculate the change of entropy for the process, water (liquid) water (vapour 373K) involving $\Delta H_{(vap)} = 40850$ Jmol^{-1} 373K

40. What is reaction Quotient?

41. What is Arrhenius equation? Explain the terms.

42. What is opposing reactions? Give an example.

43. Write a note on Brownian moment.

44. What is common ion effect. Give an example.

45. Mesotartaric acid is an optically inactive compound with chiral carbon atoms. justify.

46. Give the identification tests for phenol ?

47. How glycerol is react with $KHSO_4$.

48. How will you prepare aceto phenone by Friedal craft's reaction.

49. Write a note on HVZ reaction.

50. An organic compound (A) having molecular formula C_2H_7N is treated with nitrous acid to give (B) of molecular formula C_2H_6O which on mild oxidation gives compound (C) of molecular formula C_2H_4O which answers Tollen's reagent test. Identify A, B, C.

51. Write a note on preparation of nylon – 66? Give its use.

PART - III

Note: *Answer any **seven questions** choosing **at least two questions** from each section.*   **(7x 5 = 35)**

Section-A

52. Derive De-Broglie equation. Give its significance.

53. Explain the Aluminothermic process .

54. What is Lanthanide contraction? Discuss its consequences.

55. Explain the nature and function of haemoglobin in natural process.

Section-B

56. State the various statements of second law of Thermodynamics.

57. Apply Le chatelier's principle for the manufacture of ammonia by Haber's process.

58. Distinguish between simple and complex reactions.

59. Determine the standard e.m.f of the cell and standard free energy of the cell reaction.

     $Zn \mid Zn^{2+} \parallel Ni^{2+} \mid Ni$ $E^o Zn^{2+} \mid Zn = - 0.76$ V.
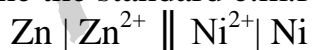
                          $E^o Ni^{2+} \mid Ni = - 0.25$ V.

Section-C

60. Explain any three preparation methods of diethyl ether.

61. Explain the mechanism of cannizaro reaction.

62. Explain the reducing properties of formic acid.

63. Explain brief on characteristics of rocket propellants.

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PART–IV

Note: *(i) Answer **four** questions in all.*　　　　　　　　　**(4x10=40)**
　　*(ii)Question Number **70 is compulsory** and answers **any three** from the remaining*
　　　questions.

64.　(a) Explain the various factors that affect electron affinity
　　　(b) How fluorine is differ from other halogens.

65.　(a) Write the postulates of Werner's theory of coordination compounds.
　　　(b) Give the uses of radioactive isotope in medicine.

66.　(a) Write a short note on most common point defects in Crystals.
　　　(b) Write briefly the adsorption theory of catalysis?

67.　(a) Derive Henderson Equation.
　　　(b) Explain the IUPAC convention of a cell diagram .

68.　(a) Explain - conformation of cyclohexanol. Comment on their stability.
　　　(b) How following conversions takes place.　　　i) salicyclic acid to methyl salicylate
　　　　ii) lactic acid to pyruvic acid　　　iii) methyl cyanide to acetamide

69. (a) Write the following reactions: (i) Carbylamine reaction
　　　　　　　　　　　　　　　(ii)Gabriel's Phthalimide synthesis.
　　(b) Outline the classification of carbohydrates giving example for each.

70. (a) An organic compound (A) of molecular formula C_6H_6O gives violet colouration with
　　　neutral FeCl3.(A) gives maximum of two isomers (B) & (C) when an alkaline solution
　　　of (A) is refluxed with CCl4.(A) also react with $C_6H_5N_2Cl$ to give compound (D)
　　　which is a red orange dye. Identify A, B, C and D. Explain the reaction.

　(b) Chief ore of chromium(A)on roasting with Sodium carbonate gives compound (B).
　　(B) on acidification gave compound (C) which on treatment with KClgave compound
　　(D). Identify the compounds A, B,C and D. Explain with proper chemical reactions.
(Or)
　(c) Compound (A) with molecular formula C_2H_4O reduce Tollen's reagent.(A) on
　　treatment with HCN gives compound (B) .Compound (B) on hydrolysis with an acid
　　gives compound (C) $C_3H_6O_3$. Compound (C) is optically active. Compound (C) on
　　treatment with Fenton's reagent gives compound (D) $C_3H_4O_3$. Compound (C) & (D)
　　gives effervescence with $NaHCO_3$ solution. Identify the compounds A,B,Cand D.
　　Explain the reactions..

　(d) Calculate the pH of 0.1 M CH_3COOH solution. Dissociation constant of acetic acid is
　　　1.8×10^{-5} M.

*s***All the Best***s*