FULL PORTION EXAMINATION

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. The substance used in making ruby, red glass and high of class pottery is
   a) Colloid silver b)Purple of cassius c)Ruby silver d)Ruby copper
2. Ceria is used in
   a) toys b) tracer bullets c) gas lamp materials d) none of the above
3. Inner transition elements are also known as ---------
   (a) Transition elements (b) block elements
   (c) d- block elements (d) rare earth elements
4. An example of an ambidentate ligand is
   a) CN^- b) Cl^- c) NO_2^- d) I^-
5. The time taken for 10g of initial amount of substance become 5g in a decay is 2hours.The time taken for 1g initial amount to become 0.5g in the same decay is
   a) 2hours b) 20hours c) 1hour d) 0.5hours
6. The term A in Arrhenius equation is called as
   a) Probability factor b) Activation of energy
   c) Collision factor d) Frequency factor
7. Colloids are purified by
   a) Precipitation b) coagulation c) dialysis d) filtration
8. The phenomenon of Tyndall's effect is not observed in
   a) Emulsion b) colloidal solution c) true solution d) None
9. The function of $FeCl_3$ in the conversion of $Fe(OH)_3$ precipitate into a colloid is_
   a) Peptizing agent b) emulsifying agent
   c) reducing agent d) precipitating agent
10. The pH of a solution containing 0.1 N NaOHsolutionsis.....
    a) 1 b) 10^{-1} c) 13 d) 10^{-13}
11. Which of the following compounds has the smell of bitter almonds?
    a) Aniline b) nitro methane
    c) Benzenesulphonic acid d) nitrobenzene
12. In nitro alkanes $-NO_2$ group is converted to $-NH_2$ group by the reaction with
    a) Zn b) Sn/HCl c) Zn/NH_4Cl d) Zn/NaOH
13. Amines have
    a) sweet smell b) rotten egg smell c) fishy odour d) garlic odour

14. Hair and nail contains
a) Cellulose b) fat c) keratin d) lipid

15. Glucose $\xrightarrow{HI / P}$?
a) starch b) n-hexane c) cyclo hexane d) no reaction

16. The intramolecular hydrogen bonding is present in
a) o-nitrophenol b) m-nitro phenol
c) p-nitro phenol d) p-hydroxy benzaldehyde

17. The type of hybridization in ICl_4^- molecule is _____
a) sp^3 b) sp^3d^2 c) dsp^3 d)sp^3d

18. Effective nuclear charge (Z*) can be calculated by using the formula
a) Z* = Z – S b) Z* = Z + S c) Z* = S – Z d) Z = Z* – S

19. One can draw the map of building on a glass plate by
a) HI b) HF c) HBr d) HCl

20. The correct electronic configuration of copper atom is
a) $3d^{10}\ 4s^1$ b) $3d^{10}\ 4s^2$ c) $3d^9\ 4s^2$ d) $3d^5\ 4s^2\ 4p^4$

21. The crystal lattice co-ordination number 8 is ___
a) NaCl b) FeS c) CsCl d) ZnS

22. 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

23. Entropy change in non – spontaneous process is
a) $\Delta S<0$ b) $\Delta S>0$ c) $\Delta S=0$ d) ΔS=Constant

24. In the reversible reaction $2HI \rightleftharpoons H_2 + I_2$, Kp is
a) Greater than Kc b) less than Kc c) Equal to Kc d) Zero

25. The equilibrium constant Kc for $A_{(g)} \rightleftharpoons B_{(g)}$ is 2.5×10^{-2}. The rate constant of forward reaction is $0.05 sec^{-1}$. Therefore, the rate constant of the reverse reaction is____.
a) $5x10^{-2}$ sec $^{-1}$ b) 2sec $^{-1}$ c) $4x10^{-2}$ sec $^{-1}$ d) $2.5x10^{-2}$ sec $^{-1}$

26. The number of primary alcoholic group in glycerol is
a) 1 b) 2 c) 3 d) 0

27. Diethyl ether can be decomposed with
a) HI b) $KMnO_4$ c) H_2O d) NaOH

28. Ether is formed when alkylhalide is treated with sodium alkoxide. This method is known as
a) Hoffmann reaction b) Williamson's synthesis
c) Wurtz synthesis d) Kolbe's reaction

29. The compound used in the preparation of the tranquilizer, sulphonal is
a) Acetone b) acetophenone c) isopropyl alcohol d) glycol

30. The compound found in some stony deposit in kidneys is
a) Potassium oxalate b) oxalic acid
c) calcium oxalate d) Potassium succinate

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. Prove that P_2O_5 is a powerful dehydrating agent?
34. Give the uses of neon.
35. Why d-block elements show variable oxidation state ?
36. What is spitting of silver and how is it prevented?
37. Calculate the number of α and β particles emitted $_{90}Th^{232}$ nucleus is converted into $_{82}Pb^{208}$? .
38. What are super conductors? Give one use.
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 activation energy?
42. What is consecutive reaction? Give an example.
43. Write a note on auto catalyst.
44. What is common ion effect? Give an example.
45. What is racemic mixture? Give one example.
46. How phenol is converted into phenopthaline ?
47. How will you obtain allyl alcohol from glycerol?
48. What is urotropine? Give its use.
49. Explain formic acid reduce Tollen's reagent, but acetic acid does not .
50. $C_6H_5CH_2NH_2 \xrightarrow{HNO_2} A \xrightarrow{(o)} B \xrightarrow{Zn/Hg\text{-}HCl} C$. Identify A, B and C.
51. What are anesthetics? Give two examples.

PART - III

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

Section-A

52. Explain the formation of oxygen molecule by Molecular orbital theory.
53. How gold is extracted from its chief ore.
54. Discuss the consequences of lanthanide contraction.
55. Give the postulates of Werner's theory of coordination compounds.

Section-B

56. State the various statements of second law of Thermodynamics.
57. Derive the expression $K_p = K_c(RT)^{\Delta ng}$ for general equilibrium reaction.
58. Explain the types of complex reactions with each one example.
59. Calculate the e.m.f of the zinc-silver cell at 25^0 C when $[Zn^{+2}]$= 0.10M and $[Ag^+]$ = 10M. (E^0_{cell} at 25^0 C = 1.56volt)

Section-C

60. Give the difference between anisole and diethyl ether.
61. Explain the mechanism of crossed aldol condensation reaction.
62. Explain the reducing properties of formic acid.
63. Explain brief on characteristics of rocket propellants.

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) Explain the Hydrate isomerism and linkage isomerism with example.
    (b) Explain the radio carbon dating.

66. (a) Explain the Bragg's spectrometer method.
    (b) Explain the intermediate compound formation theory with example

67. (a) Derive Henderson Equation.
    (b) Write a brief account on the relation between EMF and free energy.

68. (a) Discuss the optical activity in tartaric acid.
    (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) Distinguish between primary, secondary and tertiary amines.
    (b) Elucidate the structure of fructose.

70. (a) An organic compound 'A' has the formula C_2H_6O. If liberates hydrogen with metallic sodium. 'A' on oxidation with acidified dichromate gives 'B' (C_2H_4O). 'B' undergoes iodoform test 'B' on further oxidation gives 'C' ($C_2H_4O_2$). 'C' gives effervescence with sodium bicarbonate solution. Identify A, B and C explain the reaction.

(b) An element (A) belonging to group number 11 and period number 4 is extracted from the pyrite ore.(A) react with oxygen at two different temperature forming compound (B) and (C).(A) react with conc.H_2SO_4 to give (D) with the evolution of SO_2. Identify A,B,C and D. Explain the reaction

(Or)

(c) An organic compound (A) (C_2H_4O) with HCN gives (B) (C_3H_5ON). Compound (B) on hydrolysis compound (C) ($C_3H_6O_3$) which is an optically active compound.(C) also undergoes iodoform test. Identify A,B and C. Explain the reaction.

(d) Find the pH of a buffer solution containing 0.20 mole per litre CH_3COONa and 0.15 mole per litre CH_3COOH, Ka for acetic acid is 1.8×10^{-5} .

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