Model Question Paper – February 2016

Standard XII

CHEMISTRY

(English Version)

Time : Allowed:3 Hours **Max Marks: 150**

Note :

i. Answer all the questions from **Part -1**

ii. Answer any fifteen questions from **Part - II**

iii. Answer any seven questions from **Part-III** covering all sections and choosing at least two from each section.

iv. Answer question number **70** and any three from the remaining questions in **Part IV**.

v. Draw diagrams and write equations wherever necessary.

PART – I

Note : Answer all the questions

Choose and write the correct answer **30x1=30**

1. Dual character of electron was explained by ----------
   a. Heisanberg b. De- Broglie c. Pauli d. Bohr
2. If Nb=Na, the molecule is ----------
   a. stable b. equilibrium c. unstable d. none
3. Noble gases have ---------- electron affinity.
   a. low b. high c. zero d. very low
4. The compound used as smoke screen ----------
   a. H_3PO_3 b. PH_3 c. PCl_5 d. PCl_3
5. Which of the following has the maximum number of unpaired electrons?
   a. Mn^{2+} b. V^{3+} c. Fe^{2+} d. Ti^{3+}
6. Matte is------
   a. Fes_2+Cu_2s b. Cu_2S +Fes c. $Fe_2s_2+Cu_2s$ d. Fe_2s+Cu_2s
7. ----------is used in gas lamp material
   a. CeO_2 b. MnO_2 c. N_2O_5 d. Fe_2O_3
8. The colour of UO_2^{2+} ion is ----------
   a. green b. red c. yellow d. blue
9. Paramagnetic moment is expressed in ----------
   a. BM b. debye unit c. K Joules d. ergs
10. The most penetrating radiations are ----------
    a. α-rays b. β-rays c. γ - rays d. all of these
11. In a bcc lattice of A & B type atoms are present. A atoms are present at the corners while B type are at face centers. If in each unit cell one of the A type atom is missing from the bcc, the simplest formula of the compound is ----------
    a. A_7B_8 b. $A_{7/8}B_3$ c. $A_{7/8}B_{7/8}$ d. $A_1B_{7/8}$

12. For the reaction $Cl_{2(g)} \rightarrow 2Cl_{(g)}$ the signs of ΔH and ΔS respectively are.
a. +,- b. +, + c. - , - d. -,+

13. Which one of the following compound is deviates from Trouton's rule ----------
a. acetic acid b. water c. Helium d. All of these

14. State of chemical equilibrium is ----------
a. dynamic b. stationery c. both d. none

15. If $Q>K_c$, the reaction is ----------
a. Forward b. Backward c. Reversible d. none

16. Complete hydrolysis of ester, after the completion of hydrolysis-------- mole/litre present in water.
a.55.55 b.54.55 c. 55.56 d. 54.56

17. Colloids are purified by ----------
a. Precipitation b. filtration c. coagulation d. dialysis

18. Oil soluble dye is mixed with emulsion and emulsion remains colourless, then the emulsion is -----
a. O/O b. O/W c. W/O d. W/W

19. The dispersion medium in O/w type emulsion is
a. Oil b. water c. Kerosene d. Benzene

20. An example for solid present in liquid colloid is ----------
a. paint b. curd c. ink d. a and c

21. When phenol is distilled with Zn dust it gives ----------
a. Benzaldehyde b. Benzene c. Benzoic acid d. Toluene

22. When ether is exposed to air for sometime an explosive substance produced is ----------
a. peroxide b. superoxide c. Oxide d. TNT

23. The number of ether isomers possible for C_3H_8O is
a.1 b.2 c.3 d.4

24. Formaldehyde polymerises to give ----------
a. Paraldehyde b. Formic acid c. Paraformaldehyde d. Formalin

25. The order of reactivity of carboxylic acid dericatives is
a.acid chloride >Ester> Amide > Acid anhydride b. Acid chloride > Acid anhydride > Ester> Amide
c. Acid chloride > Amide> Ester> Acid anhydride d. Acid anhydride > Ester> Amide > Acid chloride

26. Which of the following compounds has the smell of bitter almonds?
a. aniline b. nitrobenzene c. benzene sulphonic acid d. nitromethane

27. When aqueous solution of Benzene diazonium chloride is boiled the product formed is ----------
a. Benzene + N_2 b. Benzyl alcohol c. Phenyl hydroxylamine d. Phenol

28. ---------- is used as 'soil sterilizing' agent.
a. chloropicrin b. Aniline c. Nitrobenzene d. All of these

29. When starch is heated to 200° c -250° c the product is
a. Dextrin b. Glucose c. Fructose d. cellulose

30. Which one of the following is called 'fruit sugar'?
a. sucrose b. Glucose c. Fructose d. Raffinose

PART – II

Answer any fifteen questions only: **15x3=45**

31. What is bond order?
32. d(Si-C)=1.93A˚, d(C-C)=1.54A˚ calculate the radius of Si.
33. Why are lead pipes not used to carry drinking water?
34. Write any three uses of Neon..
35. Explain why d- block elements exhibit variable oxidation states?
36. Why are Zn^{2+} salts colourless while Ni^{2+} salts are coloured?
37. The decay constant for $_6C^{14}$ is $2.31x10^{-4}$ $year^{-1}$. Calculate the half life period.
38. What is a Vitreous state?
39. When does entropy increase in a process?
40. State Le–Chatelier's Principle.
41. What is opposing reactions. Give an example.
42. Give the examples for first order reaction.
43. Why is a colloidal system of gas in gas does not exist?
44. Define – Faraday.
45. What is racemic mixture? Give an example.
46. Alcohols cannot be used as a solvent for Grignard's reagent. Why?
47. Write 'Riemer – Tiemann' reaction.
48. Explain 'Urotropine' preparation reaction.
49. Write the uses of oxalic acid.
50. When benezamide is treated with bromine and a alkali gives compound A also reduced by $K_2Cr_2O_7/H^+$ to give compound (B)is formed. Find A ,B and Write the equations..
51. What are 'artificial sweetening agents'? Give an example.

PART – III

NOTE: **7x5=35**

Answer any seven questions only: Answer two questions in each section is compulsory:

SECTION – A

52. Briefly explain salient features regarding hybridisation.
53. Explain extraction of zinc from its ore.
54. Distinguish Lanthanides and actinides.
55. Mention the type of hybridisation and magnetic property following complexes using VB theory. i) $[Fe\ F_6]^{4-}$ ii) $[Ni(CN_4)]^{2-}$

SECTION – B

56. State trouton rule? What types of substance deviate from trouton rule?
57. Apply Le – Chatelier's principle for the formation of $NH_3$by Haber's process.
58. Explain the experimental determination of rate constant for the decomposition of H_2O_2 in aqueous solution.
59. Calculate the emf of the Zn–Ag cell at 25^0C when $[Zn^{2+}$ = 0.10M & $[Ag^+]$=10M (E^0 =1.56 V)

SECTION – C

60. Write a note on electrophilic substitution reation of anisole.
61. Explain the following:
    (i) Acetone $\rightarrow$ Mesitylene. (ii) Fridel craft's acetylation reaction.
62. Explain the reaction mechanism of esterification reaction.
63. Explain briefly on colour and structure of dyes.

PART – IV

IV. Answer any four questions only: **4X10 = 40**

NOTE: Answer the Question No: 70 is compulsory.

64. (a) Explain Pauling's method to determine ionic radii.
    (b) General characteristics of P-block elements.
65. (a) Mention the following for the complex
    $K_3[Cr[C_2O_4)_3]$ ½H_20 (i) IUPAC Name (ii) centralmetal ion (iii) Ligand
    (iv) chargl on the coordination sphere (V) coordination number.
    (b) Explain the principle behind the 'Hydrogen bomb'?
66. (a) Write the properties of ionic crystals.
    (b) Explain the preparation of colloids from chemical methods.
67. (a) Derive Henderson equation.
    (b) Write the IUPAC convention of representation of a cell
68. (a) Describe the conformation of cyclohexanol. Comment on their stability.
    (b) Explain the following.
    (i) Aspirin preparation (ii) Decarboxylation.
69. (a) Write a note on the reduction of nitrobenzene under different mediums.
    (b) Show the formation of a peptide bond with an equation.
70. **(a)** compound (A) having molecular formula $C_3H_8O_3$ gives hydrogen gas with metallic sodium compound (A) reacts with dil. HNO_3 and con HNO_3 to give compound (B) and (c) respectively compound (A) on oxidation by Bismuth Nitrate to give compound (D) compound (A) on oxidation by Fenton's reagent (or) sodium hypobromite (or) Bromine water to give compound € Identify A, B,C,d and E and explain the reactions.

    (b) An compound (A) is known as Lunar Caustics The nitrate compound (A) . compound (A) reacts with NaCl, KBr, KI to give white precipitate of compound (B) Pale yellow precipitate of compound (C) & bright yellow precipitate of compound (D) Identify A,B,C and D and explain the reaction. **(OR)**

    (c) C_7H_6O the aromatic compound (A) undergoing 'Cannizzaro reaction'. The compound (A) react with alcoholic KCN to form compound (B) and the compound (A) is also react with acetic anhydride in the presence of sodium acetate to form compound (C). Identify the compounds A,B and C with their equations.

    (d) Find the p^H of a buffer solution containing 0.20 mole per litre CH_3COONa and 0.15 mole per litre CH_3COOH, K_a for acetic acid is $1.8x10^{-5}$.