SPECIAL QUESTION PAPER

CLASS : XII **MARKS : 70**

SUBJECT : CHEMISTRY **TIME : 3.00HRS**

I. Choose the correct answers. **15X 1 =15**

1. Drugs that bind to the receptor site and inhibit its natural function are called

a) antagonists b) agonists c) enzymes d) molecular targets

2. The central dogma of molecular genetics states that the genetic information flows from

a) Amino acids Protein DNA b) DNA Carbohydrates Proteins

c) DNA RNA Proteins d) DNA RNA

3. The formation of cyanohydrin from acetone is an example of

a) nucleophilic substitution b) electrophilic substitution

c) electrophilic addition d) Nucleophilic addition

4. Which one of the following is an example for heterogeneous catalysis?

(a) Decomposition of acetaldehyde by I_2 catalyst

(b) Decomposition of H_2O_2 in the presence of Pt catalyst

(c) Acid hydrolysis of ester

(d) Hydrolysis of cane sugar with mineral acid

5. The pH of a solution at 25°C containing 0.10 M sodium acetate and 0.03 M acetic acid is (pKa for CH_3COOH = 4.57)

(a) 4.09 (b) 5.09 (c) 6.10 (d) 7.09

6. The vacant space in bcc lattice unit cell is ……..

(a) 48% (b) 23% (c) 32% (d) 26%

7. The most common oxidation state of actinoids is

(a) +2 (b) +3 (c) +4 (d) +6

8. Structure of $XeOF_4$

a) Square pyramidal b) pentagonal bipyramidal

c) T shaped d) Linear

9. Noble gases are chemically inert. This is due to ……

(a) unstable electronic configuration (b) stable electronic configuration

(c) only filled p-orbital (d) only filled 5-orbital

10. Which one of the following ores is best concentrated by froth – floatation method?

a) Magnetite b) Hematite c) Galena d) Cassiterite

11. Assertion: pure iron when heated in dry air is converted with a layer of rust.
Reason : Rust has the composition Fe_3O_4
a) if both assertion and reason are true and reason is the correct explanation of assertion.
b) if both assertion and reason are true but reason is not the correct explanation of assertion.
c) assertion is true but reason is false d) both assertion and reason are false.

12. The rate constant of a reaction at temperature 200K is 10 times less than the rate constant at 400K. What is the activation energy of the reaction? (R = gas constant)
a) 182.4R b) 921.2R c) 460.6R d)230.3R

13. When $\Delta S < 0$ and $T\Delta S$ is Negative
(a) Absoption is exothermic (b) Adsoption is exothermic
(c) Adsoption is endothermic (d) Adsoption is endothermic

14. Which of the following is correct about – H bonding in Nucleotide?
(a) A -T, G - C b) G -T, A- C (c) A - A, T- T (d) A - G, T - C

15. Which of the following does not show optical isomerism?
(a) $[Co(en)_2Cl_2]^+$ (b) $[Co(NH_3)_3Cl_3]^0$
(c) $[Co(en)\ Cl_2\ (NH_3)_2]^+$ (d) $[Co(en)_3]^{3+}$

II. Answer Any six questions. (Question No. 24 is compulsory) **(6 x 2 = 12)**

16. Explain refining process of metal by distillation method.
17. Complete the following reactions. $SiCl_4 + C_2H_5OH \rightarrow ?$
18. What is water gas equilibrium?
19. What is the action of Copper with dil.HNO_3 and Con.HNO_3?
20. What are primitive and non primitive unit cell?
21. Write stephen's reaction.
22. Arrange the following in the increasing order of relative reactivity of acid derivatives and mention the reason alone.
23. Write Baltz Schimann reaction.
24. At a particular temperature , the Kw of a neutral solution was equal to 4×10^{-14} Calcultae the concentration of $[H_3O^+]$ and $[OH^-]$

III. Answer Any six questions. (Question No. 33 is compulsory) **(6 x 3 = 18)**

25. State Kohlraush law.And give one example.
26. What is linkage isomerism? Explain with an example.

27. Explain the oxidation state of 4d series elements.

28. Derive Arrhenius equation to calculate activation energy from the rate constant K_1 and K_2 at temperature T_1 and T_2 respectively

29. What are active centers?

30. How is terylene prepared? Give its uses.

31. Explain amines are more basic than amides.

32.Write the auto oxidation of diethyl ether.

33. Wtite the structure for the following compound

i) 4- Methyl phenyl methanal ii) 4- methyl pent 3-ene iii) 4,6 - dimethyl hept 3- ene -2 one

IV. Answer the following questions. **(5 x 5 = 25)**

34. a) Describe the structure of diborane. (Or)

b) Explain extraction of copper from its Ore.

35. a) i) Explain the manufacture of chlorine by Deacon's process

ii) Write the molecular formula and structural formula for the following molecules. a) Polythionic acid b) Peroxymono sulphuric acid (Or)

b) What is Lanthanide contraction? List the consequences of lanthanide contraction.

36. a) Derive an expression for Ostwald's dilution law. (Or)

b) i) Define : Crystal lattice ii)Write note on Impurity defect.

37. a) i) Derive integrated rate law for a first order reaction A→ product

ii) Explain Debye – Huckel Onsagar equation. (Or)

b) i) Write Trans esterification reaction. ii) What is Pinacol ? How its Prepared

38. a) i) How will you prepare Propan- 1-ol from Grignard reagent?

ii) Write Mechanism of Cannizaro reaction. (Or)

b) i) Write note on Vulcanization of Rubber.

ii) What are Antioxidants? Give example.

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