GOVERNMENT PUBLIC EXAMINATION JUNE-2024

XII – STD   **CHEMISTRY**   **Marks: 70**

PART – I

(i) Answer all the questions   **(15X1=15)**

(ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer

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

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

2. The element that does not show catenation among the following p-block elements is

   a) Carbon   b) silicon   c) Lead   d) Germanium

3. On hydrolysis, PCl_3 gives

   a) H_3PO_3 b) PH_3 c) H_3PO_4 d) $POCl_3$

4. Which type of isomerism is exhibited by $[Pt(NH_3)_2Cl_2]$?

   a) Coordination isomerism   b) Linkage isomerism   c) Optical isomerism   d) Geometrical isomerism

5. The vacant space in bcc lattice unit cell is

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

6. The decomposition of phosphine (PH3) on tungsten at low pressure is a first order reaction. It is because the

   a) Rate is proportional to the surface coverage   b) Rate is inversely proportional to the surface coverage

   c) Rate is independent of the surface coverage   d) Rate of decomposition is slow

7. The actinoid elements which show the highest oxidation state of +7 are

   a) Np, Pu, Am   b) U, Fm, Th   c) U, Th, Md   d) Es, No, Lr

8. Which of these is not likely to act as Lewis base?

   a) BF_3 b) PF_3 c) CO   d) F^-

9. Assertion: Coagulation power of Al^{3+} is more than Na^+ .

Reason: greater the valency of the flocculating ion added, greater is its power to cause precipitation

   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.

10. How many faradays of electricity are required for the following reaction to occur $MnO_4^- \rightarrow Mn^{2+}$?

   a) 5F   b) 3F   c) 1F   d) 7F

11. Which of the following compounds on reaction with methyl magnesium bromide will give tertiary alcohol?

   a) Benzaldehyde   b) propanoic acid   c) methyl propanoate   d) acetaldehyde

12. Reaction of acetone with one of the following reagents involves nucleophilic addition followed by Elimination of water. The reagent is

   a) Grignard reagent   b) Sn / HCl

   c) Hydrazine in presence of slightly acidic solution   d) Hydrocyanic acid

13. Which of the following amines does not undergo acetylation?

   a) t – butylamine   b) Ethylamine   c) Diethylamine   d) Triethylamine

14. Insulin, a hormone chemically is

   a) Fat   b) Steroid   c) Protein   d) Carbohydrates

15. Natural rubber has

   a) Alternate cis- and trans-configuration   b) Random cis- and trans-configuration

   c) All cis-configuration   d) All trans-configuration

PART -II

Answer any six questions Question number 24 is compulsory   **(6X2=12)**

16. What are the various steps involved in extraction of pure metals from their ores?

17. Write a short note on anomalous properties of the first element of p-block.

18. Out of $Lu(OH)_3$ and $La(OH)3$ which is more basic and why?

19. Define Unit cell.

20. Define P^H

21. Write a note an Catalytic poison with example.

22. How is benzoic acid prepared from toluene?

23. How are vitamins classified?

24. There are two isomers with the formula CH_3NO_2. How will you distinguish between them?

PART -III

Answer any six questions. Answer any six questions Question number 33 is compulsory (6X3=18)

25. Give the uses of sulphuric acid.

26. What are interstitial compounds? Give an example.

27. What is linkage isomerism? Explain with an example.

28. Explain any one method of Coagulation.

29. What are Lewis acids and Bases with example?

30. What are reducing and non-reducing sugars? Give example.

31. Identify A and B.

$$\text{Benzoic acid} \xrightarrow{PCl_5} A \xrightarrow[\text{Anhydrous } AlCl_3]{\text{Benzene}} B$$
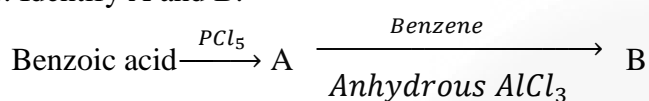
32. How is Terylene prepared?

33. The rate constant for a first order reaction is $1.54 \times 10^{-3} \text{ s}^{-1}$. Calculate its half life time.

PART -IV

Answer all the questions (5X5=25)

34. (a) Explain the Electrometallurgy of aluminium.

(OR)

(b) i) What are Interhalogen compounds. Give an example.

ii) Write the structural and molecular formula for the following,

A) Phosphoric acid   B) Nitric acid

35. (a) i) Write a notes on hydroboration.

ii) Give the uses of Borax.

(OR)

(b) In an octahedral crystal field, draw the figure to show splitting of d orbitals.

36. (a) Calculate the percentage efficiency of packing in case of body centered cubic crystal.

(OR)

(b) i) Define Rate constant

ii) Differentiate between the physisorption and chemisorption.

37. (a) Derive an expression for Nernst equation

(OR)

(b) How is phenol prepared from the following?

i) Chloro benzene

ii) Isopropyl Benzene

38. (a) How will you distinguish between the Primary , Secondary and Tertiary amines?

(OR)

(b) (i) Write a short notes on synthetic detergents.

(ii) Write the structure of all possible dipeptides which can be obtained from glycine and alanine.

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"NEVER STOP LEARNING, BECAUSE LIFE NEVER STOPS TEACHING."