

CLASS: XII
SUBJECT: CHEMISTRY

MAX. MARKS: 70 M
TIME: 3HRS

INSTRUCTIONS:

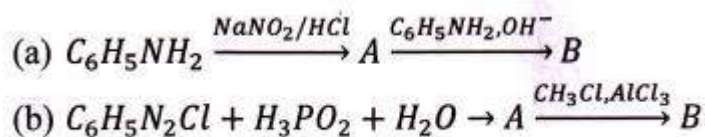
- (i) All questions are compulsory.
- (ii) Question numbers 1 to 5 are very short answer questions & carry 1 mark each.
- (iii) Question numbers 6 to 10 are short answer questions & carry 2 marks each.
- (iv) Question numbers 11 to 22 are short answer questions & carry 3 marks each.
- (v) Question number 23 is a value based question of 4 marks
- (vi) Question numbers 24 to 26 are long answer questions & carry 5 marks each.
- (vii) Use log table if necessary, use of calculators is not allowed

1. Why does white ZnO(s) become yellow on heating?
2. Which one of the following show $\text{S}_\text{N}1$ reaction faster?

I-Chloropropane or 2-Chloropropane

3. Name the factors responsible for the solubility of alcohols in water.
4. Write a test to differentiate between pentan-2-one and pentan-3-one.
5. How do you explain the presence of all the six carbon atoms in glucose in a straight chain?
6. Give reasons H_3PO_2 and H_3PO_3 act as a good reducing agents while H_3PO_4 does not. Discuss.

7. Write Gabriel phthalimide synthesis reaction.
8. Concentration of ethanol in water {C₂H₅OH} is 46% by weight. What is the mole fraction of ethanol and water in solution?
9. Identify A and B in the following reaction.



10. Why does the rate of any reaction generally decrease during the course of the reaction?

or

What are Pseudo first order reactions?, Give one example of such reactions

11. Account for the following
 - (i) Di oxygen is a gas but sulphur is a solid.
 - (ii) BiCl₃ is less covalent than PCl₃
 - (iii) F₂ is stronger oxidizing agent than Cl₂
12. Vapour pressure of pure water at 298 K is 23.8 mm Hg. 50gm of urea (NH₂CONH₂) is dissolved in 850 g of water. Calculate the vapour pressure of water for this solution and its relative lowering.
13. A sample of ferrous oxide has its actual formula as Fe_{0.93} O_{1.00}. In this sample, what fraction of metal ions are Fe²⁺ ions? What type of nonstoichiometric defect is present in this sample?
14. Draw the structures of the following.
 - (a) PCl₅(gas)
 - (b) S₈
 - (c) ClF₃

15. Write the IUPAC names of the given complexes and mention a chemical test to distinguish them. Name the isomerism shown by following isomers
- $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{SO}_4$
 - $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Br}$
16. Show that for a first order reaction, the time required for 99.9% of the reaction is about ten times required for completion of half of the reaction.
- 17.
- Name the initial material used in the industrial preparation of phenol.
 - Write complete reaction for the bromination of phenol in aqueous and non-aqueous medium
 - Explain, why Lewis acid is not required in bromination of phenol?
18. (i) Name one substance which acts as both
- Analgesics and antipyretic
 - Antiseptic and disinfectant
- (ii) Explain broad spectrum antibiotics with suitable example
19. Write the names and structures of monomers of
- Natural rubber
 - Terylen.
 - (C)Teflon
- Or
- What is a biodegradable polymer?
 - What is PHBV? Write down the reaction to form PHBV polymer.
20. (a) Give two requirements for vapour phase refining. Explain with example
- (b) What is the role of collectors in froth floatation method?
21. What are the essential and non-essential amino acids? Give two examples of each type.
22. Explain the following statements.
- Alkyl halides are generally not prepared in the laboratory by free radical halogenation of alkanes

(ii) Aryl halides are extremely less reactive towards nucleophilic substitution reaction.

(iii) dipole moment of chlorobenzene is lower than that of cyclohexyl Chloride

23. Vivek often see smoke coming out of chimneys in industrial areas. Smoke causes pollution and, therefore, no industry is allowed to let the smoke directly go into:the atmosphere. It has to be treated suitably to remove carbon particles. Vivek informs about the pollution to the municipal corporation.

(i)What we should not do in our homes Which cause pollution in the atmosphere?

(ii)What basic principle is involved in removing carbon particles from smoke?

(iii)What values are shown by Vivek?

(iv) As a chemistry student what method you will suggest the factory owner to manage dust and smoke?

24. An alkene A' (molecular formula C_5H_{10}) on ozonolysis gives a mixture of two compounds 'B' and 'C'. Compound 'B' gives positive Fehling's test and also forms iodoform on treatment. With I_2 and NaOH. Compound C does not give Fehling's test but forms iodoform. Identify the compounds A, B and C. Write the reaction for ozonolysis and formation of iodoform from B and C

Or

(a) Illustrate the following name reactions by giving a chemical equation in each case

(i) Clemmensen reduction

(ii) Hell volhard Zelinsky reaction

(b) How will you bring about the following conversions?

(i) Ethanol to acetone

(ii) Benzene to aceto phenone

(iii) Benzoic acid to benzaldehyde

25. Account for the following

(a)Titanium (IV) salts are colorless. (Atomic no. 21)

(b)Transition metals act as catalysts.

(c)Silver atom has completely filled d orbitals ($4d^{10}$) in its ground state, but it is transition element

(d) Which is stronger reducing agent Cr^{+2} or Fe^{+2} ?

(e) Transition metal exhibit highest oxidation state in oxides and fluorides.

(or)

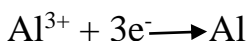
(a) Define lanthanoid contraction. Write about its 2 consequences.

(b) Account for the following

(i) Actinoid contraction is greater among the actinoids than that of lanthanoids. (lanthanoid contraction)

(ii) The members in the actinoid series-exhibit a large number of oxidation state than the corresponding members in the lanthanoids.

26. (i) Calculate the number of Coulombs required to deposit 40.5 g of Al when the electrode reaction is



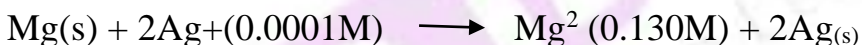
(ii) How many grams of silver could be plated out of a shield by electrolysis of a solution containing Ag^+ ions for a period of 4 hours at a current strength of 8.5 A?

Or

(i) Why does the conductivity of a solution decrease with dilution?

ii) State Kohlrausch law.

iii) Represent the cell in which the following reaction takes place



Calculate its E_{cell} if $E^0_{\text{cell}} = 3.17 \text{ V}$