

# PRACTICE QUESTIONS

SUBJECT – CHEMISTRY

CLASS – XII

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## General Instructions

- All questions are compulsory.
- Question numbers 1 to 5 are Very Short Answer Questions and carry 1 mark each.
- Question numbers 6 to 10 are Short Answer Questions and carry 2 marks each.
- Question numbers 11 to 22 are also Short Answer Questions and carry 3 marks each.
- Question number 23 is Value Based Question and carry 4 marks.
- Question numbers 24 to 26 are Long Answer Questions and carry 5 marks each.
- Use log table if necessary, use of calculator is not allowed.

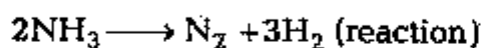
## Section A

1. Convert 1° alcohol to 2° alcohol.
2. Write a test to differentiate between pentan-2-one and pentan-3-one.
3. How do you explain the presence of all the six carbon atoms in glucose in a straight chain?
4. Why does white ZnO(s) becomes yellow on heating?
5. Iodine is more soluble in KI than in water.

## Section B

6. Account for the following:
  - (i) Alkaline medium inhibits the rusting of iron.
  - (ii) Why is alternating current used for measuring resistance of an electrolytic solution?

7. What are the IUPAC names and give the structure of the insecticide DDT and BHC? Why is their use banned in India and in other countries?
8. What will be the osmotic pressure of 0.1 M monobasic acid, its pH is 2 at 25°C?
9. Give two requirements for vapour phase refining.
10. Calculate the order of the reaction from the following data.



Pressure (mm Hg)	50	100	200
Half-lives (min)	3.52	1.82	0.93

Or

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

## Section C

11. (i) Write the structure of pyrophosphoric acid, dithionic acid and Marshall's acid.  
(ii)  $\text{PCl}_5$  reacts with finely divided silver on heating and a white silver salt is obtained, which dissolves on adding excess aqueous  $\text{NH}_3$  solution. Write the reactions involved to explain what happens?
12. Vapour pressure of pure water at 298 K is 23.8 mmHg. 50 g of urea ( $\text{NH}_2\text{CONH}_2$ ) is dissolved in 850 g of water. Calculate the vapour pressure of water for this solution and its relative lowering.
13. An element occurs in bcc structure. It has a cell edge length of 250 pm. Calculate the molar mass, if its density is  $8.0 \text{ g cm}^{-3}$ . Also, calculate the radius of an atom of this element.
14. (i) Calculate the number of Coulombs required to deposit 40.5 g of Al when the electrode reaction is  $\text{Al}^{3+} + 3\text{e}^- \longrightarrow \text{Al}$ .  
(ii) How many grams of silver could be plated out of a shield by electrolysis of a solution containing  $\text{Ag}^+$  ions for a period of 4h at a current strength of 8.5 A?
15. A solution containing 0.319 g of  $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$  was passed through a cation exchange resin and acid coming out of the cation exchange resin required 28.5 mL of 0.125 M NaOH. Determine the correct formula of the complex [molecular weight of the complex =  $266.5 \text{ gmol}^{-1}$ ].
16. (i) What happens when gelatin is mixed with gold sol?  
(ii) How do emulsifying agents stabilise the emulsion?  
(iii) Why does bleeding stop by rubbing moist alum?
17. (i) Give the name and structure of the initial material used in the industrial preparation of phenol.  
(ii) Write complete reaction for the bromination of phenol in aqueous and non-aqueous medium.  
(iii) Explain, why Lewis acid is not required in bromination of phenol.

18. In what respect do prontosil and salvarsan resemble? Is there any resemblance between a dye and prontosil? Explain.

19. Write the names and structures of monomers of

(i) natural rubber.

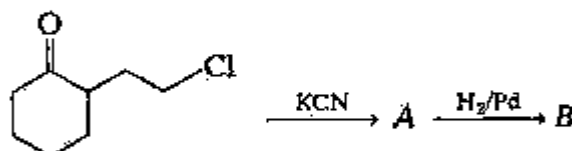
(ii) terylene.

(iii) teflon.

Or

Are polyesters and polyacrylates same? Justify your answer.

20. (i) Identify A and B in the following reaction.

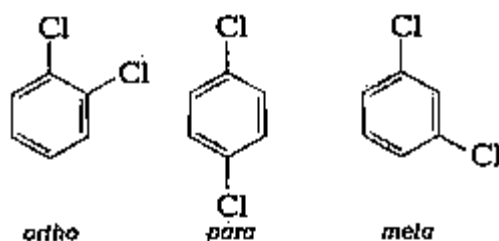


(ii) Why is  $\text{—NH}_2$  group of aniline acetylated before carrying out nitration?

21. (i) What are the essential and non-essential amino acids? Give two examples of each type

(ii) What causes the disease sickle cell anaemia?

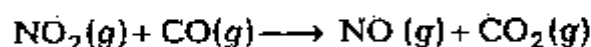
22. (i) Arrange the isomers of  $\text{C}_6\text{H}_4\text{Cl}_2$  (aromatic) in the increasing order of melting point boiling point.



(ii) Explain, why alkyl halides are generally not prepared in the laboratory by free radical halogenation of alkanes?

## Section D

23. Oxygen atom transfer from  $\text{NO}_2$  to CO produces NO and  $\text{CO}_2$ .



This reaction can also be utilised to remove poisonous gases like  $\text{NO}_2$ , CO, etc., from atmosphere.

The rate equation for this reaction at temperature less than 500 K is  $\text{Rate} = k [\text{NO}_2]^2$ .

Based on the above information, answer the following questions.

(i) Can this reaction occur in one bimolecular step?

(ii) If the concentration of  $\text{NO}_2$  is doubled, what will be the rate of the reaction?

(iii) Addition of catalyst increases the rate of the reaction. Why?

(iv) What values do you get from the above passage?

## Section E

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

When liquid *A* is treated with a freshly prepared ammoniacal silver nitrate solution, it gives bright silver mirror. The liquid forms a white crystalline solid on treatment with sodium hydrogen sulphite. Liquid *B* also forms a white crystalline solid with sodium hydrogen sulphite but it does not give test with ammoniacal silver nitrate. Which of the two liquids is aldehyde? Write the chemical equations of these reactions also.

25. A violet compound of manganese *A* decomposes on heating to liberate oxygen and compounds *B* and *C* of manganese are formed. Compound *C* reacts with  $KOH$  in the presence of potassium nitrate to give compound *B*.

On heating compound *C* with conc.  $H_2SO_4$  and  $NaCl$ , chlorine gas is liberated and a compound *D* of manganese along with other products is formed. Identify compounds *A* to *D* and also explain the reactions involved.

Or

(i) Transition metals can act as catalysts because these can change their oxidation state. How does  $Fe(III)$  catalyse the reaction between iodide and persulphate ions?

(ii) Mention any three processes where transition metals act as catalysts.

26. Assign reasons for the following.

(i) Describe the favourable conditions for the manufacturing of (a) ammonia by Haber's process, and (b) sulphuric acid by contact process.

(ii) Draw the structures of the following.

(a)  $PCl_5(g)$  (b)  $S_8(g)$  (c)  $ClF_3(g)$

Or

Assign reasons for the following.

(i) Sulphur in vapour phase is paramagnetic.

(ii) Ammonia ( $NH_3$ ) has greater affinity for protons than phosphine ( $PH_3$ ).

(iii) The negative value of electron gain enthalpy of fluorine is less than that of chlorine.

(iv)  $BiCl_3$  is less covalent than  $PCl_3$ . Explain.

(v) In noble gases, only xenon is known to form well established chemical compounds.