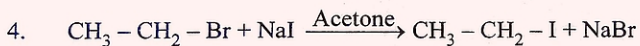


Answer any 4 questions from 1 to 5. Each carries 1 score.

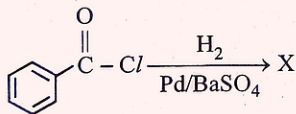
(4 × 1 = 4)

1. The unit of rate constant of a zero order chemical reaction is _____.
2. Among the following transition elements which one has a completely filled d orbital ?
(a) Ag (b) Ti
(c) Mo (d) Ni
3. Give an example for a didentate ligand.



The name of this reaction is _____.

5. Identify the product 'X' in the chemical reaction given below :



Answer any 8 questions from 6 to 15. Each carries 2 scores.

(8 × 2 = 16)

6. State Henry's law. Write any one application of it.
7. What are Ideal Solutions ? Give one example.

8. \wedge_m° for NaCl , HCl and CH_3COONa are 126.4, 425.9 and $91.0 \text{ S cm}^2 \text{ mol}^{-1}$ respectively. Calculate \wedge_m° for CH_3COOH .
9. (i) What are Pseudo first order reactions? (1)
(ii) Write one example for pseudo first order reaction. (1)
10. (i) Transition elements show variable oxidation state. Why? (1)
(ii) Identify the element in the 3d transition metal series that exhibits maximum number of oxidation states. (1)
11. Write the IUPAC names of the following compounds :
(a) $[\text{Co}(\text{NH}_3)_4(\text{H}_2\text{O})\text{Br}]\text{Br}_2$
(b) $\text{K}_3[\text{Al}(\text{C}_2\text{O}_4)_3]$
12. Differentiate between $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions.
13. How is phenol manufactured industrially? Write the chemical equation.
14. Aniline does not undergo Friedel craft's reaction. Why?
15. What are oligosaccharides? Give any two examples.

Answer any 8 questions from 16 to 26. Each carries 3 scores.

(8 × 3 = 24)

16. (i) Define Molar Conductivity. (1)
- (ii) Graphically represent the variation of molar conductivity with concentration for strong and weak electrolytes. (2)
17. (i) A first order reaction is found to have a rate constant, $k = 6.8 \times 10^{-14} \text{ s}^{-1}$. Find the half life of the reaction. (1)
- (ii) Write the integrated rate equation for a first order reaction and explain the terms in it. (2)
18. Explain the effect of temperature and catalyst on the rate of chemical reaction.
19. Write the preparation of $\text{K}_2\text{Cr}_2\text{O}_7$ from Chromite ore.
20. (i) What is Spectrochemical series ? (1)
- (ii) Draw figure to show the splitting of d orbitals in octahedral crystal field and label the diagram. (2)
21. Name the products formed when phenol is treated with the following reagents :
- (i) Bromine water (1)
- (ii) Zinc dust (1)
- (iii) Conc. HNO_3 (1)
22. Explain the following :
- (i) Kolbe's reaction (1½)
- (ii) Reimer-Tiemann reaction (1½)

23. (i) Write any two nucleophilic addition reactions of aldehyde. (2)
(ii) Name the product formed when ethanal is reduced with LiAlH_4 . (1)
24. (i) Which one is more reactive among aldehydes and ketones? (1)
(ii) Describe any two tests to distinguish aldehydes from ketones. (2)
25. (i) What is Carbylamine reaction? (1)
(ii) Explain why aniline is less basic than ammonia. (2)
26. (i) What are essential and non-essential amino acids? (1)
(ii) Explain the amphoteric behaviour of amino acids. (2)

Answer any 4 questions from 27 to 31. Each carries 4 scores.

(4 × 4 = 16)

27. (i) What are Colligative properties? (1)
(ii) Write any two colligative properties. (1)
(iii) What is reverse osmosis? Mention one important practical utility of reverse osmosis. (2)
28. Lead storage battery which is commonly used in automobiles is an example for a secondary cell.
- (i) Write the name of anode and cathode used in this cell. (1)
(ii) Write the reactions taking place in the anode and cathode of this cell. (2)
(iii) Explain how this cell can be recharged. (1)

29. (i) Draw the structure of the geometrical isomers of the co-ordination compound $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$. (2)
- (ii) On the basis of Valence Bond Theory (VBT) explain the structure and magnetic property of $[\text{Ni}(\text{CN})_4]^{2-}$. (2)
30. (i) Identify the major and minor product obtained by the reaction between 2-bromo butane and alcoholic KOH. (2)
- (ii) Name and state the rule behind the formation of these products. (2)
31. (i) Explain Haloform reaction. (2)
- (ii) How will you prepare benzaldehyde by Gatterman – Koch reaction ? (1)
- (iii) Write the name of the reaction involved in the following conversion :

