

Sample Paper – 2013
Class – XII
Subject – Chemistry (Theory)

Time allowed: 3 hrs

M.M: 70

General Instructions:

1. Answer all the questions.
2. Question number 1 to 8 carry 1 mark each. Answer them in one word or one sentence each.
3. Question number 9 to 18 carry 2 marks each. Answer them in 30 words each.
4. Question number 19 to 27 carry 3 marks each. Answer it in about 40 words each.
5. Question number 28 to 30 carry 5 marks each. Answer them in about 70 words each.
6. Use of calculator not permitted. Use of log table permitted

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| 1. Name two antidepressants. | 1 |
| 2. Define 12-16 compounds. | 1 |
| 3. . Define the pseudomolecular reactions. | 1 |
| 4. Give one example of sulphonation reaction. | 1 |
| 5. Write IUPAC name of $\text{CH}_3\text{-CH=CH-CH}_2\text{-CHO}$ | 1 |
| 6. Draw the structure of zwitter ion. | 1 |
| 7. Convert Benzene to fluorene. | 1 |
| 8. What are biodegradable polymers? Give one example. | 1 |
| 9. What are Antifertility drugs? Give examples. | 2 |
| 10. Define colligative properties with example. | 2 |
| 11. A 1 st order reaction is 50% complete in 30 minutes at 27 ⁰ C and in 10 min. at 47 ⁰ C. Calculate
(i) rate constant for reaction at 27 ⁰ C and 47 ⁰ C.
(ii) energy of activation for the reaction . | 2 |
| 12. What is activation energy? How is it related to rate constant K? | 2 |

13. Give four differences between types of emulsions. 2
14. What are lyophobic colloids? Give two examples. How does lyophobic colloid differ from lyphillic colloids. 2
15. Compare the stability of +2 oxidation state of elements with outer electronic configuration $3d^6 4s^2$, $3d^5 4s^2$ and $3d^3 4s^2$ in aqueous solution. 2
- OR**
- What is Lanthanoid Contraction? Mention two consequences of Lanthanoid contraction. 2
16. Explain the mechanism of dehydration of alcohols. 2
17. Distinguish chemically between a) phenol and ethanol b) methanal and ethanal. 2
18. Write the equation of the reaction involved in the preparation of Bakelite. 2
19. Al crystallizes in a cubic close packing structure (FCC) Its metallic radius is 125 pm .Find the edge length of the unit cell. How many unit cells are there in 1cm^3 of Al ? How many atoms are there in 1cm^3 of Al ? 3
20. Calculate the boiling point of 1M KCl solution. Density of solution= $1.04\text{g}/\text{cm}^3$. Molar mass of KCl= 74.5u $K_b=0.52\text{K Kg mole}^{-1}$. Assume KCl is 90% dissociated in aqueous solution. 3
21. Give the structures of a) XeO_3 b) H_3PO_4 c) PCl_3 3
22. Account for the following: 3
- Zn, Cd, and Hg are not considered as transition elements.
 - Actinoid show variety of oxidation states.
 - Transition metals forms alloys.
23. a) Write main postulates of werner,s co-ordination theory. b) Draw the geometrical isomers of $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$ 3
- OR**
- What type of isomerism is exhibited by $[\text{Co}(\text{NH}_3)_5\text{Br}]\text{CO}_3$? Write the IUPAC name of both the isomers. Give one chemical test to distinguish between these two isomers. 3
24. Explain SN_1 and SN_2 Reactions. 3
25. Outline the principles of refining of the metals by the following methods: 3
- Mond's process
 - Liquation
 - distillation.
26. Explain following: 3
- WILLIAMSON'S REACTION.
 - WURTZ REACTION.
 - SCHOTTEN-BAUMANN REACTION.

27. i) Explain the following with respect to protein-
 a) Native state of protein
 b) Peptide linkage 3
 ii) Two strands of DNA are not identical but complimentary to each other. Explain this statement.

28. a) Write the reaction involved at each electrode in H_2-O_2 fuel cell. 5
 b) Give one similarity and one difference between fuel cell and other primary cells.
 c) Give advantages of fuel cells.

OR

- a) State **Kohlrausch law** of independent migration of ions. 5
 b) Write the reaction involved at each electrode in mercury cell / dry cell.
 c) Calculate the cell potential at 298K for the reaction

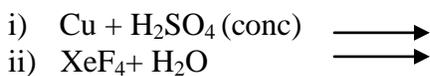
$$Zn + Sn^{4+} \longrightarrow Zn^{2+} + Sn^{2+}$$

$$(1.5M) \quad 0.5M \quad (2M)$$

$$E^0_{Zn^{2+}/Zn} = -0.76V \quad E^0_{Sn^{4+}/Sn^{2+}} = 0.13V$$

29. a) Account for the following: 5
 i) Group 18 elements have positive value of electron gain enthalpy.
 ii) HF has highest boiling point while HCl has the lowest boiling point among hydrogen halide.
 iii) Sulphur vapours are paramagnetic in nature.

b) Give the products and balance the reactions:



OR

- a) Account for the following: 5
 i) NeF_2 is not known.
 ii) Fluorine has lesser negative value of electron gain enthalpy than Chlorine.

b) explain Ostwald's process.

30. a) Carry out the following conversions: 5
 i) Benzene to fluorobenzene..
 ii) Benzaldehyde to 3-Phenyl propan-1-ol
 iii) Benzoic acid to m-nitro benzoic acid.
 b) Give one example each of
 i) Stephen reduction

ii) Aldol condensation.

OR

a) Explain LUCAS test for distinguish between 1° 2° and 3° alcohols.

b) Give one example each of

i) Cannizaro reaction

ii) Acetylation.

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