

COMMON HALF YEARLY EXAMINATION - 2025

A

Standard XII

Reg.No.

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CHEMISTRY

Time : 3.00 hrs

Part - I

Marks : 70
15 x 1 = 15

I. Choose the correct answer:

1. Zinc is obtained by ZnO by
 - a) Carbon reduction
 - b) Reduction using silver
 - c) Electrochemical process
 - d) Acid leaching
2. The basic structural unit of silicates is
 - a) $(\text{SiO}_3)^{2-}$
 - b) $(\text{SiO}_4)^{2-}$
 - c) $(\text{SiO})^-$
 - d) $(\text{SiO}_4)^{4-}$
3. Among the following, which is the strongest oxidizing agent?
 - a) Cl_2
 - b) F_2
 - c) Br_2
 - d) I_2
4. The magnetic moment of Mn^{2+} ion is
 - a) 5.92 BM
 - b) 2.80 BM
 - c) 8.95 BM
 - d) 3.90 BM
5. Crystal field stabilization energy for high spin d^5 octahedral complex is
 - a) $-0.6 \Delta_0$
 - b) 0
 - c) $2(p - \Delta_0)$
 - d) $2(p + \Delta_0)$
6. The crystal with a metal deficiency defect is
 - a) NaCl
 - b) FeO
 - c) ZnO
 - d) KCl
7. The addition of a catalyst during a chemical reaction alters which of the following quantities?
 - a) Enthalpy
 - b) Activation energy
 - c) Entropy
 - d) Internal energy
8. Which of these is not likely to act as a Lewis base?
 - a) BF_3
 - b) PF_3
 - c) CO
 - d) F^-
9. Assertion : Pure iron when heated in dry air is converted with a layer of rust.
Reason : Rust has the composition Fe_3O_4
 - 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. The most effective electrolyte for the coagulation of As_2S_3 sol is
 - a) NaCl
 - b) $\text{Ba}(\text{NO}_3)_2$
 - c) $\text{K}_3[\text{Fe}(\text{CN})_6]$
 - d) $\text{Al}_2(\text{SO}_4)_3$
11. Carboic acid is
 - a) Phenol
 - b) Picric acid
 - c) Benzoic acid
 - d) Phenyl acetic acid
12. In the following reaction $\text{CH} \equiv \text{CH} \xrightarrow[\text{HgSO}_4]{\text{H}_2\text{SO}_4} \text{X}$ Product 'X' will not give
 - a) Tollen's test
 - b) Victor Mayer test
 - c) Iodoform test
 - d) Fehling solution test
13. Which of the following reagent can be used to convert nitrobenzene to aniline?
 - a) Sn/HCl
 - b) Zn/Hg/NaOH
 - c) Zn/ NH_4Cl
 - d) All of these
14. Complete hydrolysis of cellulose gives
 - a) L-Glucose
 - b) D-Fructose
 - c) D-Ribose
 - d) D-Glucose
15. Which one of the following is a bio-degradable polymer?
 - a) HDPE
 - b) PVC
 - c) Nylon-6
 - d) PHBV

Part - II

II. Answer any 6 questions. (Q.No.24 is compulsory)

6 x 2 = 12

16. Which type of ores can be concentrated by Froth floatation method? Give two examples for such ores.
17. Write the uses of silicones.
18. Name any four neutral ligands.
19. Calculate the number of atoms in FCC unit cell.
20. Define solubility product.
21. What is Tyndall effect?
22. Write Knoevenagal reaction.
23. What are hormones? Give example.
24. The rate constant for a first order reaction is $1.54 \times 10^{-3} \text{ s}^{-1}$. Calculate its half life time.

Part - III

III. Answer any 6 questions. (Q.No.33 is compulsory)

6 x 3 = 18

25. Write the preparation of potash alum.
26. Write any three differences between Lathanoids and Actinoids.
27. $[\text{Pt}(\text{NO}_2)(\text{H}_2\text{O})(\text{NH}_3)_2] \text{Br}$ For this complex, identify the following
i) Central metal atom / ion ii) Coordination number
iii) Oxidation number of the central metal ion
28. What is autocatalysis? Give example.
29. State Faraday's Laws of Electrolysis.
30. Give the structure of Zwitter ion.
31. Write Transesterification reaction.
32. How nylon-2-nylon-6 is prepared?

33. Complete the following reactions: $\text{C}_6\text{H}_5\text{OH} \xrightarrow{\text{Zn dust}} \text{A} \xrightarrow[\text{Anhyd AlCl}_3]{\text{CH}_3\text{Cl}} \text{B} \xrightarrow[\text{KMnO}_4]{\text{acid}} \text{C}$

Part - IV

IV. Answer all the questions.

5 x 5 = 25

34. a) Explain Magnetic separation method. (OR)
b) i) What is catenation? Describe briefly the catenation property of carbon. (3)
ii) Give the uses of helium. (2)
35. a) i) Write the allotropes of phosphorus. (2)
ii) What are interhalogen compounds? Give examples. (3) (OR)
b) Based on VB theory, Explain why $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic?
36. a) Explain Schottky and Frenkel defects. (OR)
b) i) Derive integrated rate law for a zero order reaction $\text{A} \rightarrow \text{product}$ (3)
ii) What are lyophillic colloids? Give two examples. (2)
37. a) Derive an expression for Ostwald's dilution law. (OR)
b) i) Write a note on Gabriel phthalimide synthesis. (3)
ii) What are food preservatives? Give two examples. (2)
38. a) i) Write Rosenmund reaction. (2)
ii) Explain Popoff's rule with example. (3) (OR)
b) compound (A) of molecular formula $\text{C}_6\text{H}_6\text{O}$ gives purple colouration and neutral FeCl_3 . Compound (A) reacts with ammonia to give compound (B) and it also reacts with Zn dust to give compound (C). Identify the compounds A, B and C and write down the equations.
