

V12C

Virudhunagar District
Common Half Yearly Examination - 2023

Standard 12

CHEMISTRY

Time Allowed: 3.00 Hours

Maximum Marks: 70

Part - I

I. Choose the correct answer:

15 x 1 = 15

- Which among the following is not a borane?
a) B_2H_6 b) B_3H_6 c) B_4H_{10} d) none of these
- Assertion (A) : Ionic solids do not conduct electricity in solid state.
Reason (R) : Ionic solids have high melting point.
a) both (A) and (R) are correct, (R) is the correct explanation of (A)
b) both (A) and (R) are correct, but (R) is not the correct explanation of (A)
c) (A) is correct but (R) is wrong d) (A) is wrong but (R) is correct
- Nylon is an example of
a) poly amide b) polythene c) polyester d) polysaccharide
- Complex ion Instability constant (α)**
1) $[Fe(SCN)]^{2+}$ 1.0×10^{-3}
2) $[Cu(NH_3)_4]^{2+}$ 1.0×10^{-12}
3) $[Ag(CN)_2]^-$ 1.8×10^{-19}
4) $[Co(NH_3)_6]^{3+}$ 6.2×10^{-36}
From the above table find out which of the following complex is most stable?
a) $[Cu(NH_3)_4]^{2+}$ b) $[Fe(SCN)]^{2+}$ c) $[Co(NH_3)_6]^{3+}$ d) $[Ag(CN)_2]^-$
- Conjugate base for Bronsted acids H_2O and HF are
a) OH^- and H_2F^+ respectively b) H_3O^+ and F^- respectively
c) OH^- and F^- respectively d) H_3O^+ and H_2F^+ respectively
- Which of the following compound can be used as antifreeze in automobile radiators?
a) methanol b) ethanol
c) neo pentyl alcohol d) ethan-1,2-diol
- Which of the following reduction is not thermodynamically feasible?
a) $Cr_2O_3 + 2Al \rightarrow Al_2O_3 + 2Cr$ b) $Al_2O_3 + 2Cr \rightarrow Cr_2O_3 + 2Al$
c) $3TiO_2 + 4Al \rightarrow 2Al_2O_3 + 3Ti$ d) none of these
- Which among the following is the unit of rate constant of zero order reaction?
a) $mol\ L^{-1}\ S^{-1}$ b) $mol^{-1}\ L\ S^{-1}$ c) $mol^{-2}\ L^{-2}\ S^{-1}$ d) S^{-1}
- Which among the following does not react with nitrous acid?
a) 2-nitro propane b) 2-methyl-1-nitro propane
c) 2-methyl-2-nitro propane d) nitro ethane
- In acid medium potassium permanganate oxidises oxalic acid to
a) oxalate b) Acetate c) carbon dioxide d) acetic acid
- Fog is a colloidal solution of
a) solid in gas b) liquid in gas c) gas in gas d) gas in liquid
- The formation of cyanohydrin from acetone is an example of
a) nucleophilic substitution b) electrophilic substitution
c) nucleophilic addition d) electrophilic addition
- In which of the following oxyacids the oxidation state of phosphorus is +3?
a) H_3PO_3 b) H_3PO_4 c) $H_4P_2O_7$ d) HPO_3
- Faraday constant is defined as
a) charge carried by one electron
b) charge required to deposit one mole of substance
c) charge carried by one mole of electrons
d) charge carried by 6.022×10^{10} electrons

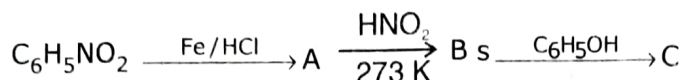
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15. The secondary structure of a protein refers to
 a) fixed configuration of the polypeptide back bone b) hydrophobic interaction
 c) sequence of α -amino acids d) α -helical back bone

Part - II**II. Answer any 6 questions. (Q.No.24 is compulsory)****6 x 2 = 12**

16. What are the differences between minerals and ores?
 17. Give the uses of silicones.
 18. Which is more stable : Fe^{3+} and Fe^{2+} ? Explain.
 19. Give the differences between order and molecularity of a reaction.
 20. Write the expression for the solubility product of $\text{Ca}_3(\text{PO}_4)_2$
 21. State Kohlrausch Law.
 22. What is metamerism? Give the structure of metamers of 2-methoxy propane.
 23. What are antibiotics? Give example.
 24. Identify compounds A,B and C in the following reaction.

**Part - III****III. Answer any 6 questions. (Q.No.33 is compulsory)****6 x 3 = 18**

25. Write a note on Zeolites.
 26. What are interhalogen compounds? Give example. Write the hybridisation of interhalogen compound of the type AB_7 ?
 27. Write the postulates of Werner's theory of coordination compounds.
 28. Distinguish tetrahedral and octahedral voids.
 29. Derive an expression for Nernst equation.
 30. Explain intermediate compound formation theory of catalysis with an example.
 31. What is Urotropine? How is it prepared? Mention its uses.
 32. Give any three differences between DNA and RNA.
 33. Convert benzene diazonium chloride into
 i) benzene ii) nitro benzene iii) phenyl hydrazine

Part - IV**IV. Answer all the questions.****5 x 5 = 25**

34. a) i) Explain zone refining with an example. (3 marks)
 ii) Write a short note on anomalous properties of the first element of p-block (2 marks)
(OR)
 b) i) What is inert pair effect? (2 marks)
 ii) What is Lanthanide contraction and what are the effects of Lanthanide contraction? (3 marks)
35. a) Discuss briefly the nature of bonding in metal carbonyls. (5 marks)
(OR)
 b) i) Explain Schottky defect? (3 marks)
 ii) Write Arrhenius equation and explain the terms involved. (2 marks)
36. a) i) Derive an expression for Ostwald's dilution law. (3 marks)
 ii) Write a note on Standard Hydrogen Electrode. (SHE) (2 marks)
(OR)
 b) Differentiate physisorption and chemisorption.
37. a) i) Explain Lucas test of differentiating three types of alcohols. (3 marks)
 ii) Write the equation for the following conversions :
 1) benzaldehyde \rightarrow cinnamic acid and
 2) Benzaldehyde \rightarrow Malachite green (2 marks)
(OR)
 b) Write short notes on : i) Gomberg reaction (5 marks)
 ii) Hofmann's bromamide reaction iii) Schotten-Baumann reaction.
38. a) Elucidate the structure of glucose.
(OR)
 b) Explain the mechanism of cleansing action of soaps and detergents.