



Chemistry_XII | Sample Mock Paper Class 12th SA2(Paper_3)

Name :

Date : 11-03-2022

Time : 120 Mins

M.M. : 35

General Instructions:

1. Question 1 to 3 Short answer type (SA1) questions of 2 Mark each.
2. Question 4 to 11 Short answer type (SA2) questions of 3 Mark each.
3. Question 12 Long answer type (LA) questions of 5 Mark each.

- Q1 Describe with an example of each, the role of coordination compounds in: (a) Biological systems, (b) Analytical chemistry and (c) Medicinal chemistry. 2
- Q2 Given that standard potential of Cu^{2+}/Cu and Cu^+/Cu couples as 0.34 V and 0.52 V respectively, calculate the standard electrode potential of Cu^{2+}/Cu couple. 2
- Q3 How will you convert cyclopentyl methanol to cyclopentylethanoic acid? 2
- Q4 Account for the following observations: 3
- (a) $\text{p}K_b$ for aniline is more than that for methylamine.
 - (b) Methylamine solution in water reacts with ferric chloride solution to give a precipitate of ferric hydroxide.
 - (c) Aniline does not undergo Friedel-Crafts reaction.
- Q5 Write the structures of A, B and C in the following reactions: 3
- (a) $\text{C}_6\text{H}_5\text{NO}_2 \xrightarrow{\text{Sn/HCl}} \text{A} \xrightarrow[273 \text{ K}]{\text{NaNO}_2 + \text{HCl}} \text{B} \xrightarrow[\Delta]{\text{H}_2\text{O}} \text{C}$
 - (b) $\text{CH}_3\text{Cl} \xrightarrow{\text{KCN}} \text{A} \xrightarrow{\text{LiAlH}_4} \text{B} \xrightarrow[273 \text{ K}]{\text{HNO}_2} \text{C}$
- Q6 An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compound 'B' which on heating with Br_2 and KOH forms a compound 'C' of molecular formula $\text{C}_6\text{H}_7\text{N}$. Write the structures and IUPAC names of compounds A, B and C. 3
- Q7 How much charge is required for the following reduction of 3
- (a) 1 mol of Al^{3+} to Al.
 - (b) 1 mol of Cu^{2+} of Cu
 - (c) 1 mol of MnO_4^- to Mn^{2+}

- Q8 Explain: 3
- (a) Why are Sm^{2+} , Eu^{2+} and Yb^{2+} good reducing agents?
 - (b) Can lanthanum ($Z = 57$) exhibit +4 oxidation state?
 - (c) Why are +3 oxidation state of gadolinium ($Z = 64$) and lutetium ($Z = 91$) especially stable?
 - (d) Why do Zr and Hf exhibit similar properties?
- Q9 A reactant has a half-life of 10 minutes. 3
- (a) Calculate the rate constant for the first order reaction.
 - (b) What fraction of the reactant will be left after an hour of the reaction has occurred?
- Q10 What is the difference between multimolecular and macromolecular colloids? Give one example of each type. How are associated colloids different from these two types of colloids? 3
- Q11 Describe the preparation of potassium permanganate from pyrodusite ore. Write balanced chemical equation for one reaction to show the oxidizing nature of potassium permanganate. 3
- Q12 An organic compound (A) on treatment with acetic acid in the presence of sulphuric acid produces an ester (B). (A) on mild oxidation gives (C). (C) with 50% KOH followed by acidification with dilute HCl generates (A) and (D). (D) with PCl_5 followed by reaction with ammonia gives (E). (E) on dehydration produces hydrocyanic acid. Identify the compounds A, B, C, D and E. 5