

U.G. 2nd Year Examination – 2020
(BLENDED MODE)
CHEMISTRY[HONOURS]
(Inorganic Practical)
Paper-VI

Full Marks: 50

Time: 4 Hours

The figure in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

Group-A & B (Inorganic quantitative analysis & Preparation)

- A.** Answer any **five** from the following: **10×5 = 50**
1. What is redox titration? Write down name and structure of a redox titration. Why is KMnO_4 called a self-indicator? Why do we heat oxalic acid solution containing H_2SO_4 up to $70\text{-}80^\circ\text{C}$ in the permanganometrically titration? Why higher temperature heating is avoided? Why KMnO_4 not regarded as a primary standard? 1+2+2+2 + 1 + 2
 2. Which is better oxidant KMnO_4 or $\text{K}_2\text{Cr}_2\text{O}_7$ in acid medium? Explain. Why SnCl_2 should be added dropwise and excess of reagent should be avoided during Fe(III) reduction? Why HgCl_2 should be added all at once? What is its role? How will you prepare 250 mL of 0.1(N) standard solution of oxalic acid? 2 + 2 + 2 + 2 + 2
 3. Explain the mode of action of redox indicator. What is Zimmermann Reinhardt solution? Give its function. Why phosphoric acid and sulphuric acid are added before titration with $\text{K}_2\text{Cr}_2\text{O}_7$? Why Whatman-41 filter paper is required to filter ferric hydroxide precipitate? 3 + 3 + 2 + 2
 4. Are some redox indicators pH dependent? Cite examples. What is meant by back titration? Cite an example of it. State two advantages of dichromatometry. Why addition of NH_4Cl is must before addition of NH_4OH to precipitate ferric hydroxide? How will you remove Cr(III) from Cr(III) + Fe(III) mixture to determine Fe(III) amount? 2 + 2 + 2 + 2 + 2
 5. Why should we store $\text{Na}_2\text{S}_2\text{O}_3$ solution in dark and closed bottles? Why excess KI is used in iodometric titration? What is the function of NH_4SCN in Cu^{2+} determination? Write the related reaction. What is the role of NH_4HF_2 in the Cu(II) estimation by iodometry? Why is the starch indicator added near the end of the titration and not at the beginning? 2 + 2 + 2 + 2 + 2
 6. What is seeding agent? State procedure for preparation of $\text{K}_3[\text{Fe}(\text{C}_2\text{O}_4)_3] \cdot 3\text{H}_2\text{O}$ complex. Give its chemical name. Is this complex optically active? Draw its possible isomers. 2 + 3 + 1 + 1 + 3
 7. What is complexometric titration? Write down the name and structure of a complexing agent. Write down the name and structure of a metal indicator. Why Ca(II) estimation can't be carried out using EBT indicator? Write down the principle for estimation Ca(II) and Mg(II) ions in a mixture by EDTA solution. 1 + 2 + 2 + 2 + 3