

2020

CHEMISTRY**[HONOURS]****Paper : X****(PRACTICAL)**

Full Marks : 80

Time :

*The figures in the right-hand margin indicate marks.***GROUP-A****(Inorganic)****(Marks : 40)**Answer any **four** from the following: 10×4=40

1. a) Define solubility and solubility product. Explain common ion effect with example. 2+2+3
- b) What do you mean by semi-micro qualitative inorganic analysis? 2
- c) Give the formula of sodium cobaltinitrite. 1
2. a) In case of separation of metal ions through qualitative analysis, mention the number of groups, corresponding metal ions assigned in the respective groups and specify the corresponding group reagents. 2+2+2
- b) Explain why Pb^{2+} is included in both Gr-I and Gr-II? 2
- c) How Mg^{2+} is detected? 2

3. a) What is flame test? Why conc. HCl is used in the flame test? 1+2
- b) Write down the reactions involved in the oxidative fusion test for Cr^{3+} . 3
- c) You are given a sample of CoO , how could you identify Co^{2+} through Borax bead test? Give the reactions starting from heating the borax. 4
4. a) Give the formula of ammonium molybdate. How phosphate is detected? Give reactions. 2+3
- b) Draw the structure of DMG? Write down the balanced equation of the reaction of Ni^{2+} with DMG in ammoniacal medium. 2+3
5. a) Give the tests in tabular form for the cation and anion in PbSO_4 as an insoluble residue. 5
- b) How chloride can be detected in presence of bromide. Present it in tabular form. 5
6. Write short notes on (any **two**): 5+5
 - a) Chromyl chloride test
 - b) Brown ring test
 - c) Phosphate separation

[Turn over]

GROUP-B

[Organic and Industrial]

[Marks : 40]

7. Answer any **one** from the following: $20 \times 1 = 20$

- A.
- a) Discuss the principle of estimation of aniline with proper equation. 5
 - b) Discuss the procedure of estimation of aniline. 5
 - c) What is starch? What is the composition of starch? 5
 - d) How will you calculate the equivalent weight of KBrO_3 ? What is the functional group present in aniline? Is it involved directly in the estimation of aniline? $2+1+2=5$
- B.
- a) Discuss the principle of estimation of glucose with proper equation. 5
 - b) Discuss the procedure of estimation of glucose. 5
 - c) What are Fehling A and Fehling B solutions? 5
 - d) 'Reaction between glucose and Fehling solution is a redox process.' Comment on this statement with proper reasons. 5

8. Answer any **one** from the following: $20 \times 1 = 20$

- A.
- a) What is the cause of hardness of water? How is the hardness of water expressed? Can EDTA be used as primary standard? $2+1+2=5$
 - b) Discuss the theory for determination of total hardness of water. 5
 - c) Discuss the titration procedures for the measurement of total hardness of water. 5
 - d) What is EBT? What kind of indicator is it? What is buffer solution? $2+1+2=5$
- B.
- a) What is pyrolusite? What do you mean by available oxygen in pyrolusite? In permanganometry no indicator is used – why? $1+2+2=5$
 - b) Discuss the theory for the determination of available oxygen in pyrolusite. 5
 - c) Discuss the titration procedure for the estimation of available oxygen in pyrolusite. 5
 - d) Calculate equivalent weight of KMnO_4 solution in acid medium. Is KMnO_4 solution primary standard? Explain. 5