

**Master of Science (M.Sc.) Semester-III (CBCS)
(Chemistry) Examination
Analytical Chemistry Special-II (CH-3T2)
Paper-X**

Time: Three Hours]

[Max. Marks: 60

- N.B.: 1. All questions are compulsory
2. All questions carry equal marks
3. Use of Calculator is permitted
4. Draw labelled diagrams wherever necessary

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| 1 (a) | How nitrogen is determined in organic compounds using semi-micro analysis? | 4 |
| (b) | Discuss the procedure for determination of amino group in aniline. | 4 |
| (c) | Elaborate the procedure for standardization of Karl Fisher reagent. | 4 |
| OR | | |
| 1(d) | Discuss the procedure for determination of sulphur in organic compounds using semi-micro analysis. | 4 |
| (e) | Discuss the procedure for determination of hydroxyl group in phenol. | 4 |
| (f) | Determine the procedure of titration of methanol and KF reagent using a well labelled diagram. | 4 |
| 2(a) | Determine the procedure for analysis of silica and alumina in Bauxite ore. | 4 |
| (b) | Discuss the manufacturing processes of cement in detail. | 4 |
| (c) | Discuss the procedure for determination of CaO and MgO in Dolomite ore. | 4 |
| OR | | |
| 2(d) | Determine the procedure for analysis of Fe ₂ O ₃ and Cr ₂ O ₃ in chromite ore. | 4 |
| (e) | Discuss the procedure for determination of loss on ignition, silica and lime content in cement. | 4 |
| (f) | Discuss the procedure for determination of P ₂ O ₅ , TiO ₂ and V ₂ O ₅ in bauxite ore. | 4 |
| 3(a) | Discuss the procedure for determination of alkalinity and hardness in water samples. | 4 |
| (b) | Elaborate the procedure for analysis of DO in water samples. | 4 |
| (c) | Give a brief idea regarding sand filters and pressure filters in water treatment plants. | 4 |

OR

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| 3(d) | Discuss the procedure in brief for determination of pH, conductivity, turbidity and fluoride in water samples. | 4 |
| (e) | Elaborate the procedure for analysis of BOD in water samples. | 4 |
| (f) | Discuss the analysis of Hg and Pb using AAS technique in water samples. | 4 |
| 4(a) | Discuss the sampling train and analysis procedure for SO ₂ pollutant. | 4 |
| (b) | Determine the analysis of SPM and RSPM using High volume samplers. | 4 |
| (c) | Discuss the significance of fabric filters and cyclones in controlling air pollution. | 4 |
| OR | | |
| 4(d) | Discuss the sampling train and analysis procedure for NO ₂ pollutant. | 4 |
| (e) | Discuss in detail the working of ESP using well labelled diagram. | 4 |
| (f) | Discuss the phenomena of Green House effect and Acid rains in detail. | 4 |
| 5(a) | Discuss the procedure for determination of aldehydes and ketones in organic compounds using semi-micro analysis. | 3 |
| (b) | What are the types of raw materials required for manufacturing of cement? | 3 |
| (c) | Discuss the procedure for determination of nitrite in water samples. | 3 |
| (d) | Discuss the procedure for analysis of CO ₂ pollutant in air. | 3 |