

M.Sc. III Semester

Examination 2021

Subject: Chemistry

Paper Code: MCH-E304

(Analysis of Cement, Minerals, Alloys, Trace Metals and Polymers)

Time: 3 Hrs.

Max. Marks: 70

Min. Pass % 40

**Note:** Attempt all the sections as per instructions.

SECTION - A

(Short Answer)

Note: Answer any five questions in about 150 words each. Each question carries six marks.

(5 × 06) = 30

- Q.1. Discuss the analysis of combined oxides ( $Al_2O_3 + Fe_2O_3$ ) in talcum powder?
- Q.2. Explain the Volumetric procedure for the determination of calcium and Magnesium
- Q.3. Briefly discuss the role of gypsum in cement and their setting.
- Q.4. Write a note on weathering of cement and concrete.
- Q.5. Write a brief note on determination of Iron from iron ores.
- Q.6. Explain the procedure for the determination of Copper by thiocyanide method.
- Q.7. Discuss the general aspects of inorganic colorimetric trace analysis citing examples of some colorimetric reagents.
- Q.8. What do you understand by general aspects of Inorganic colorimetric trace analysis?
- Q.9. Discuss the purification of polymers and monomers.
- Q.10. Explain the synthesis of polymer of acrylonitrile.

SECTION – B

(Long Answer)

Note: Answer any four questions in detail. Each question carries ten marks. (4 × 10 = 40)

- Q.1. Explain the analysis of Talcum powder. Write procedures for the determination of calcium and carbon dioxide in  $CaCO_3$ .
- Q. 2 Write a notes on determination of Mg in Magnesium sulphate and determination of phosphate in sodium phosphate.
- Q.3 What is cement? Explain giving the different types and standard methods used for the chemical analysis of cement.
- Q.4. Discuss the analysis of all ingredients of brass.
- Q.5. (a) Discuss the analysis of nickel coin (b) Write procedure for the determination of zinc
- Q.6. Give the methods for the separation and isolation of traces of elements. Discuss the method for the determination of Lead.
- Q.7. Explain the synthesis of poly methyl methacrylate and polymer of ethylene glycol with maleic acid,
- Q.8. What is glass transition temperature of polymers? How to determine glass transition temperature of polymers?