

20MSC502P					Inorganic Chemistry I					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
0	0	3	1.5	3	--	--	--	50	50	100

**COURSE OBJECTIVES**

- To learn experimental techniques for the quantitative estimation of different inorganic samples
- To acquire the skill to separate mixture of ions by chromatography
- To gain practical knowledge of ore analysis
- To develop the skill for alloy analysis
- To demonstrate the skills for spectrophotometric estimation of coordination complexes

1. Separation of Cations and Anions by Ion exchange/ Thin Layer Chromatography.

**2. Ore analysis (At least two)**

- a. Determination of Manganese in pyrolusite
- b. Determination of Copper and iron from chalcopyrite.
- c. Determination of iron from hematite.
- d. Quantitative estimation of CaCO<sub>3</sub> in dolomite

**3. Alloy analysis (At least two)**

- a. Stainless Steel (Fe, Cr and Ni)
- b. Steel or Mild Steel (Fe and Cr)
- c. Bronze (Cu and Zn)
- d. Gun metal (Cu, Sn)
- e. Solder (Pb and Sn)
- f. Nichrome (Fe, Ni, Cr)
- g. Cupronickel (Cu and Ni)

**4. Spectrophotometric Estimation (Any one)**

- a. Colourimetric estimation of Fe(III) (as thiocyanate complex)
- b. Colourimetric estimation of Fe(II) and Fe(III) in a mixture as Fe(II)-1,10-phenanthroline complex.

**5. Quantitative analysis (At least three)**

- a. Gravimetric estimation of Zn(II) as Zn(NH<sub>4</sub>)(PO<sub>4</sub>)
- b. Gravimetric estimation of Cu(II) as CuSCN
- c. Gravimetric estimation of Pb(II) as (Pb)<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>
- d. Volumetric estimation of Mn(II)/Fe(III)
- e. Volumetric estimation of Cr(VI)/ Fe(III)
- f. Volumetric estimation of Cu(II)/ Fe(III)
- g. Volumetric estimation of Cu(II)/Cr(VI)

**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1** – Gain an insight into multifarious laboratory techniques for the quantitative analysis of inorganic compounds.
- CO2** – Demonstrate the skills to separate the given mixture of ions by chromatographic techniques.
- CO3** – Practical knowledge and skills for ore analysis.
- CO4** – Determine percent composition of different metals in a given alloy.

**CO5** – Demonstrate the expertise for spectrophotometric estimation of coordination complexes.

**CO6** – Gain an experience in determining the inorganic content by gravimetric and volumetric estimation.

**TEXT/REFERENCE BOOKS**

1) A text book of Quantitative Inorganic Analysis – A. I. Vogel

2) Experimental Inorganic Chemistry - W. G. Palmer

3) The analysis of minerals and ores of the rarer elements – W. R. Schoeller and A.R. Powell, Charles, Griffin and Company Limited.

4) EDTA Titrations –F.Laschka

**END SEMESTER EXAMINATION QUESTION PAPER PATTERN**

**Max. Marks: 100**

Laboratory work including maintaining journal book+ mid-sem viva (LW)

End-sem exam and viva (LE/Viva)

**Exam Duration: 3 Hrs**

50 Marks

50 Marks