

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma in Chemical Engineering

Semester: 3

Subject Code

Subject Name CHEMICAL PROCESS TECHNOLOGY-I

Sr. No.	Course content
1.	INTRODUCTION : 1.1 Scope of chemical Industry 1.2 Classification of Chemical Industries
2.	ACIDS : 2.1 Physical and chemical properties of sulphuric acid 2.2 Uses of sulphuric acid 2.3 Manufacture of sulfuric acid by DCDA process 2.4 Major engineering problems for sulfuric acids 2.5 Uses and physical properties of HCL 2.6 Manufacture of hydrochloric acid by synthetic method
3.	PHOSPHORUS AND PHSPHORIC ACID : 3.1 Physical properties of phosphors 3.2 Manufacturing of phosphorus by electrical furnace process 3.3 Physical properties and uses of phosphoric acid 3.4 Types of manufacturing processes 3.5 Manufacturing method of phosphoric acid by HCL leaching 3.6 Major engineering problems for manufacturing phosphoric acid
4.	CHLOR-ALKALI INDUSTRIES : 4.1 Different process of production of soda ash 4.2 Manufacturing of soda ash by Solvay process 4.3 Physical properties of soda ash, caustic soda and chlorine 4.4 Production of caustic soda by electrolytic process 4.5 Major engineering problems for manufacturing soda ash, caustic soda and chlorine
5.	CEMENT AND LIME : 5.1 Introduction 5.2 Properties of cement 5.3 Types of cement 5.4 Manufacturing process of Portland cement 5.5 Major Engineering problems of cement industries 5.6 Physical properties of lime 5.7 Uses of lime 5.8 Manufacturing process of lime by hydrated lime process 5.9 Major Engineering problems of hydrated lime process

6.	METALLURGICAL INDUSTRIES : 6.1 Introduction 6.2 Production of pig iron by Bessemer process 6.3 Difference between stainless steel and mild steel 6.4 Alumina production from bauxite
7.	MISCELLANEOUS : 7.1 Basic study of explosive 7.2 Explain refrigerant and propellants 7.3 Define soap and detergent 7.4 Method of soap production by continuous hydrolysis and saponification
8.	POLYMER : 8.1 Introduction 8.2 Types of polymers 8.3 Modes of polymerization 8.4 Manufacturing process of 6-6nylon 8.5 Manufacturing process of vinyl chloride from ethylene di-chloride 8.6 Difference between thermosetting and thermoplastic
9.	COAL AND COAL CHEMICALS : 9.1 Introduction 9.2 Coking of coal 9.3 Distillation of coal tar 9.4 Gasification of coal 9.5 Hydrogenation of coal

LABORATORY EXPERIMENTS :

1. Standardization of sulfuric acid solution
2. Standardization of HCL acid solution
3. Standardization of NaOH solution
4. Estimation of CaOH group
5. Preparation of Hydrated lime
6. preparation of soap
7. preparation of detergent

Reference Books:

1. Outlines of Chemicals Technology- M.Gopala Rao
2. Chemical Process Industry –Shreve and Austin
3. Chemical Technology -vol.1&2 by G.N. Panday
4. Industrial Chemicals –by Faith, Keyes and Clark