

# AMMI-21 MINERAL PROCESSING

## UNIT-1 INTRODUCTION

- 1.1 Scope, objectives and limitations of mineral processing;
- 1.2 Liberation and beneficiation characteristics of minerals and coal.

## UNIT-2 COMMINATION

- 2.1 Theory and practice of crushing and grinding;
- 2.2 Different types of crushing and grinding equipment their application and limitations.

## UNIT-3 SIZE SEPARATION

- 3.1 Laboratory size analysis and interpretation; Settling of solids in fluids; Industrial screens; Mechanical classifiers and hydro cyclones.
- 3.2 Gravity concentration methods: Jigging, heavy media separation, flowing film concentrator's theory, application and limitations.

## UNIT-4 FROTH FLOTATION

- 4.1 Physic-chemical principles; Reagents; Machines; Flotation of sulphides, oxides and coal. Electrical and magnetic methods of concentration:
- 4.2 Principles, fields of application and limitations.
- 4.3 Dewatering: Thickener and filter. Hydro-metallurgical methods of recovery:
- 4.4 Leaching principle, various methods and applications.
- 4.5 Laboratory sampling.
- 4.6 Simplified flow sheets for coal, copper, lead, zinc, gold, iron, manganese ores and lime stone.

### Reference Books:

1. "Principles of Mineral Processing, Society for Mining Metallurgy and Exploration" by M C Fuerstenau and Kenneth N Han
2. "Mineral Processing Technology: An Introduction to the Practical Aspects of Ore Treatment and Mineral Recovery" by Barry Wills and Tim Napier-Munn.