

PMI6I102 DEWATERING & DRYING (3-1)
(Professional Core Paper)

Module I (10 hours)

Introduction to dewatering and drying Flocculation and Dispersion – Fundamental factors underlying flocculation and dispersion phenomena. Mechanism of reagent adsorption, factors affecting flocculation and dispersion, selective flocculation.

Module II (08 hours)

Dewatering by gravity sedimentation (thickening) principles and practices. Sizing and selection of thickeners, Different types of thickeners and their use in mineral industries.

Module III (08 hours)

Filtration: Principles of filtration, Flow through packed beds, factors affecting the Filtration. Different types of filters and their design features.

Module IV (10 hours)

Centrifuging & Drying: Different types of thermal dryers and their applications, Centrifugal sedimentation. Application and practice of dewatering processes in mineral industries.

DEWATERING & DRYING LAB

1. Comparison of pressure and vacuum filter using coal of same size.
2. Effect of coal particle size in vacuum filtration.
3. Effect of coal particle size in pressure filtration, comparison of pressure and vacuum filter using a mineral of same size.
4. Dewatering of coal fines using hydrocyclone.
5. Estimation of filtration rate constant for (coal and mineral) using vacuum filter.
6. Estimation of filtration rate constant (coal and mineral) using pressure filter.
7. Estimation of rate of sedimentation of solid from a suspension with or without flocculants,
8. Estimation of rate of sedimentation of solid from a suspension with or Without dispersants,
9. Estimation of rate of drying using a dryer.