

SYLLABUS
(Section-'B') Diploma in Mining

Unit-I

Mining Technology : A

Site selection techniques. Modes of entry to underground mines, shaft sinking methods and techniques. Drilling techniques. Explosives used in mines. Detonators, Blasting Practices in underground and opencast mines. Blasting equipments and accessories. Precautions in blasting operations.

Unit-II

Mining Technology : B

Mining methods of underground metalliferous and coal mines. Methods of opencast mining. Types and techniques of roof support. Water management in mines. Mine lighting techniques. Transportation in underground and opencast mines. Machines and equipments in underground and opencast mines - their characteristic features and applicability. Stowing methods. Mine subsidence.

Unit-III

Physical Geology and Mineralogy :

Physical Geology - Interior of the Earth, Weathering, Geological Work of Wind and Rivers. Earthquakes and Volcanoes. Mineralogy - Physical properties of minerals. Identification of common minerals.

Unit-IV

Petrology, Structural Geology, Stratigraphy and Palaeontology :

Petrology - Study of Igneous, Sedimentary and Metamorphic rocks. Structural Geology - Dip and Strike, Folds, Faults, Unconformities and Joints. Stratigraphy - Geological Time Scale, Stratigraphic classification of Indian rock formations. Elementary idea about modes of fossilization and uses of fossils.

Unit-V

Economic Geology and Hydrology :

Classification of ore deposits. Ranks and Origin of coal. Deposits of coal in India. Mineral wealth of India including Madhya Pradesh. Mineral Prospecting methods. Groundwater resources, water table, porosity and permeability.

Unit-VI

Mine Surveying - A :

Principles of Surveying. Distance measurement techniques. Chain surveying, Compass surveying, Plane table surveying. Computation of areas and Volumes. Surveying with Miner's Dial. Underground surveying - Transfer of survey stations from roof to floor and floor to roof. Marking of centre line in underground locations.

Mine Surveying - B :

Levelling techniques and instruments. Contouring techniques. Subsidence survey - lateral and vertical displacement calculations.

Unit-VII

Mine Surveying methods :

Surveying methods with Theodolite, details of Theodolite instrument. Bore hole surveying - dip, strike and bore hole problems. Curve fitting, Super elevation. Slope surveying. Correlation surveying.

Unit-VIII

Mine Management and Legislation :

Principles of Scientific management, Managerial function in mines - Work study, Time study, Motion study, Planning, Organizing, Staffing, Direction. Control, classification and causes of accidents in mines. Safety aspects in mining. Important provisions related with mine safety and management. Mines Acts, Mines Rules. Coal and Metalliferous Mines Regulations. Legislation of Madhya Pradesh state pertaining to grant of mining lease and royalty on minerals. Functions of Mineral Resources Department, Government of Madhya Pradesh.

Unit-IX

Mine Environmental Engineering :

Properties of gases found in underground mines. Techniques for detection of mine damps. Construction and application of flame safety lamps. Causes, prevention and control of subsurface mine fires. Spontaneous heating, Incubation period. Causes and precautions against fire damp explosion and coal dust explosion. Coward's diagram. Mine rescue apparatus and operations.

Unit-X

Mine Ventilation Engineering :

Natural ventilation. NVP. Mechanical ventilation - Axial flow fans. Centrifugal fans. Forcing fans. Exhaust fans. Auxiliary fans, Booster fans. Ventilation devices. Air-crossing. Splitting of mine air. Standards of ventilation. Laws of air flow in underground mines. Ventilation survey.