AMMI-6 MINE VENTILATION

UNIT-1 COMPOSITION OF MINE ATMOSPHERE

1.1 Mine gases- production, properties and effects; Sampling and analysis of mine air;
1.2 Methane content; Methane drainage; Flame safety lamp and its uses;
1.3 Methanometers; Methane layering; Radon gas and its daughter products;
1.4 Monitoring of gases.

UNIT-2 HEAT AND HUMIDITY

2.1 Sources of heat in mines; Effects of heat and humidity;
2.2 Psychrometry, Kata thermometer; Air-conditioning.

UNIT-3 AIR FLOW THROUGH MINE OPENINGS

3.1 Laws of flow, resistance of airways, equivalent orifice, losses in airways, distribution of air, economic design of airways;
3.2 Flow control devices; Permissible air velocities in different types of workings/openings; Standards of ventilation.

UNIT-4 NATURAL VENTILATION

4.1 Causes, effect of seasonal variations, calculation of NVP from air densities,
4.2 Thermodynamic principles and other methods.

UNIT-5 MECHANICAL VENTILATION

5.1 Types of mine fans; Theory, characteristics and suitability of fans;
5.2 Selection, testing and output control; Fans in series and parallel;
5.3 Forcing and exhaust configurations; Reversal of flow; Fan drifts, diffusers, evasees;
5.4 Booster and auxiliary ventilation;
5.5 Venturi blowers; Ventilation of deep mines- underground and open pit.

UNIT-6 VENTILATION PLANNING

6.1 Planning of ventilation systems and economic considerations;
6.2 Ventilation layouts for mining of coal and ore deposits;
6.3 Ventilation of workings/stopes using heavy blasting;
6.4 Calculation of air quantity required for ventilating a mine;
6.5 Calculation of total mine head; Network analysis principles and computer applications;
6.6 Automation and remote control of ventilation installations; Ventilation surveys.

Reference Book

1. Mine Ventilation A Concise Guide for Students by Sierra Fernández, Carlos