

AMMI-9 UNDERGROUND COAL MINING

UNIT-1 INTRODUCTION

- 1.1 Present situation and future growth of coal mining industry in India and world, different coal mining industries in India,
- 1.2 Factors effecting selection of mode of entry and different types of mode entry: incline, shaft, inclined shaft, coal mine development and its scenario,
- 1.3 Different terminology used in coal mine development, different coal mining methods,
- 1.4 Factors influencing choice of coal mining methods.
- 1.5 Software application in coal mines for development and depillaring operations.

UNIT-2 BOAD AND PILLAR MINING

- 2.1 Applicability, limitations, advantages and disadvantages of Bord and pillar mining method,
- 2.2 Development and depillaring sequence operations in Bord and Pillar mining, and its related calculations, local fall, main fall, air blast.
- 2.3 Dangers associated with B& P method and precautions. Case study with layout.

UNIT-3 LONGWALL MINING

- 3.1 Applicability, limitations, merits and demerits, different longwall mining methods, factors influencing selection of longwall method,
- 3.2 Method of development and depillaring and its related calculations.
- 3.3 Thin seam and thick seam mining with longwall mining method, Case study with layout.

UNIT-4 THICK SEAM AND DEEP SEAM MINING

- 4.1 Problems associated with thick and deep seam Mining, selection of mining method, caving and stowing methods, limitations and applicability:
- 4.2 Different slicing methods-(inclined Slicing, Horizontal Slicing, Diagonal Slicing, Transversely Inclined Slicing),and Caving methods (Sublevel Caving) Working Steep and Moderately Thick Seams:
- 4.3 Blasting Gallery Method, room and pillar method,
- 4.4 The Velenje Method, Descending Shield Method of Mining.

UNIT-5 MODERN COAL MINING METHODS

- 5.1 Applicability, limitations, merits and demerits of Inseam Mining and Horizon Mining, Hydraulic Mining, plough methods, chirimiri caving method, shield mining,
- 5.2 Method of extraction by coal gasification and contiguous seam.
- 5.3 Working underneath surface features, extraction of multi seams, problems and issues: Coal Bed Methane.
- 5.4 Goaf Control: strip packing or solid stowing, Hydraulic Stowing etc.
- 5.5 Procurement of stowing materials and its transportation, theoretical aspects and case studies.

UNIT-6 FUTURE INNOVATIONS

- 6.1 Blind long hole pre-shattering methods, scientific mining approach, application of mining software for mine development and extraction and production planning and design of workings,
- 6.2 Size and grade control by CSP and CWP, case study.
- 6.3 Outcome: understand students about all coal mining methods and their limitations,
- 6.4 Handling and working in difficult working conditions in the field.

Reference Books:

1. Underground Coal Mining Methods – J. G. Singh, Braj Kalpa Publishers, Varnasi, 2000.
2. Coal Mining – I.C.F. Statham, Vol. I, II, III and Vol. III. The Caxton Publishing Company Ltd. Inc. 1958.
3. Elements of Mining technology- D.J.Deshmukh Vol.1

