

# AMMI-2 MINE MACHINERY-I

## UNIT-1 INTRODUCTION

- 1.1 Different types of motive power used in mines- their fields of application,
- 1.2 Relative merits and demerits;
- 1.3 Transmission and distribution of compressed air in mines, compressed air drills.
- 1.4 Elements of the transport system, classification and techno-economic indices.
- 1.5 Wire ropes- classification, construction, fields of application, rope capping and splicing;
- 1.6 Deterioration of rope in use and its prevention;
- 1.7 Testing of ropes, selection and maintenance, rope calculations.

## UNIT-2 ROPE HAULAGE

- 2.1 Rail Track and tubs- gauge; layout, curves, turnouts and cross-over,
- 2.2 Track maintenance, main features of rolling stock like tubs,
- 2.3 Mine cars man riding cars and tippers;
- 2.4 Types of rope haulages- merits,
- 2.5 Demerits and fields of application,
- 2.6 Constructional features, safety appliances and rope haulage calculations.

## UNIT-3 OTHER TRANSPORT SYSTEMS-I

- 3.1 Locomotives- diesel, trolley-wire, battery locomotives,
- 3.2 Constructional features and safety devices and comparison of different types;
- 3.3 Underground and surface battery charging stations and safety measures,
- 3.4 Locomotive calculations;

## UNIT-4 OTHER TRANSPORT SYSTEMS-II

- 4.1 Shuttle cars, underground trucks, load-haul- dumpers,
- 4.2 SDL vehicles, aerial rope ways, gravity transport,
- 4.3 Principles of hydraulic & pneumatic transportation and their fields of application,
- 4.4 Electric layouts, man riding systems.

## UNIT-5 PUMPING & CONVEYING

- 5.1 Different types of drives,
- 5.2 Installation and maintenance of pumps and pipes in shafts and roadways, electrical layouts,
- 5.3 Various sources of water in mines, design of sumps.
- 5.4 Face haulage and conveyors- Various types of conveyors,
- 5.5 Scraper chain conveyors, AFCs, belt conveyors, cable belt conveyor,
- 5.6 Shaking and vibrating conveyors, armoured flexible conveyors,
- 5.7 High angle conveying, electrical layouts.
- 5.8 Numerical problems in conveyors

## UNIT-6 MINE ELECTRICAL ENGINEERING

- 6.1 Distribution of electric power in mines,
- 6.2 Types of mine cables and their fields of applications, mining switch gears and their installation in hazardous atmosphere,
- 6.3 Flame proof enclosures, intrinsically safe circuits, (examples) safety aspects and signalling.
- 6.4 Mine telephone system and latest development in mine communications.

#### Reference Books

- 1 Karelin N.T., Mine Transport, Orient Longmans, N. Delhi.
- 2 Mason, E., Coal Mining Series, Mining Machinery, Virtue and Company Ltd., London.
- 3 Statham, I.C.F., Coal Mining, Vol. I, II, III and IV, Caxton Eastern Agencies, Calcutta.
- 4 Deshmukh D.J., Elements of Mining Technology, Vol. III EMDEE Publishers, Nagpur, 1989.

