

**STATE COUNCIL FOR TECHNICAL EDUCATION & VOCATIONAL TRAINING, ODISHA**

**TEACHING & EVALUATION SCHEME**

**DISCIPLINE : Mining Engineering**

**SEMESTER : V**

Subject Code	Subject	Teaching Scheme (Hours/week)			Evaluation Scheme					Total Marks
					Theory			Practical		
		L	T	P	End Exam	Teacher Assignment	Class Test	End Exam	Sessional	
MNT-501	Environmental Studies and Mine Atmosphere	4	-	-	70	10	20	-	-	100
MNT-502	Mine Survey-III	4	-	-	70	10	20	-	-	100
MNT-503	Mining Legislation & General Safety-II	4	-	-	70	10	20	-	-	100
MNT-504	Mine Environment & Hazards	4	-	-	70	10	20	-	-	100
MNT-505	Mine Machinery-I	4	-	-	70	10	20	-	-	100

**Practical**

MNP-501	Mine Survey-III Lab.	-	-	6	-	-	-	50	50	100
MNP-502	Mine Environment & Hazards Lab.	-	-	6	-	-	-	25	25	50
MNP-503	Mine machinery-I Lab.	-	-	6	-	-	-	25	25	50
MNP-504	Industrial Training Report & Seminar	-	-	-	-	-	-	-	50	50
	Library Studies	-	-	1	-	-	-	-	-	-
<b>Total :</b>		<b>20</b>	<b>-</b>	<b>19</b>	<b>350</b>	<b>50</b>	<b>100</b>	<b>100</b>	<b>150</b>	<b>750</b>

NOTE : (i) Evaluation for Teacher Assignment, Class Test , Sessional & Practical to be made as per guidelines of SCTE & VT., Odisha, Bhubaneswar.

(ii) The Theory & Practical classes except Industrial Training will be conducted for 11 weeks and Industrial Training will be for 4 weeks.

# ENVIRONMENTAL STUDIES AND MINE ATMOSPHERE

## MNT-501

<i>L/wk</i>	<i>T/wk</i>	<i>P/wk</i>	<i>Evaluation Scheme</i>	
<b>04</b>	<b>00</b>	<b>00</b>	<i>End Sem Exam</i>	<b>: 70</b>
<i>Periods per week</i>	<b>: 04</b>		<i>Class Test</i>	<b>: 20</b>
<i>Total Periods</i>	<b>: 44</b>		<i>Teachers Assessment</i>	<b>: 10</b>
			<hr/> <i>Total Marks</i>	<b>: 100</b>

### TOPIC WISE DISTRIBUTION OF PERIODS (THEORY)

<b>Sl. No.</b>	<b>Topics</b>	<b>Periods</b>
01.	The Multidisciplinary nature of environmental studies	03
02.	Natural Resources	07
03.	Environmental Pollution and mine gases	12
04.	Social issues and the Environment	07
05.	Human population and the environment	10
06.	Mine Dust	05
		<hr/> 44

### COURSE CONTENTS:

#### 1.0 The Multidisciplinary nature of environmental studies

- 1.1 Definition, scope and importance, Need for public awareness.

#### 2.0 Natural Resources

- 2.1 Renewable and non renewable resources:

##### 2.1.1 Natural resources and associated problems

- Forest resources: Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people.
- Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dam's benefits and problems.
- Mineral Resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- Food Resources: World food problems, changes caused by agriculture and over grazing, effects of modern agriculture, fertilizers- pesticides problems, water logging, salinity, case studies.
- Energy Resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies
- Land Resources: Land as a resource, land degradation, man induces land slides, soil erosion, and desertification.

- 2.1.2 Natural resources and associated problems
- 2.1.3 Role of individual in conservation of natural resources.
- 2.1.4 Equitable use of resources for sustainable life styles.

### **3.0 Environmental Pollution and Mine gases**

Definition Causes, effects and control measures of:

- 3.1 Air pollution
- 3.2 Mine gases and their physiological effects
- 3.3 Water pollution
- 3.4 Soil pollution
- 3.5 Marine pollution
- 3.6 Describe sources of noise in Mines, vibration effects and its control due to mining activities
- 3.7 Thermal pollution
- 3.8 Nuclear hazards
- 3.9 Solid waste Management: Causes, effects and control measures of urban and industrial wastes, Role of an individual in prevention of pollution, Pollution case studies, Disaster management: Floods, earth quake, cyclone and land slides

### **4.0 Social issues and the Environment**

- 4.1 Form unsustainable to sustainable development
- 4.2 Urban problems related to energy
- 4.3 Water conservation, rain water harvesting, water shed management
- 4.4 Resettlement and rehabilitation of people; its problems and concerns, case studies
- 4.5 Environmental ethics: issues and possible solutions
- 4.6 Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies.
- 4.7 Wasteland reclamation
- 4.8 Consumerism and waste products
- 4.9 Environment protection Act
- 4.10 Air (prevention and control of pollution) Act
- 4.11 Water (prevention and control of pollution) Act
- 4.12 Wildlife protection act
- 4.13 Forest conservation act
- 4.14 Issues involved in enforcement of environmental legislations
- 4.15 Public awareness

### **5.0 Human population and the environment**

- 5.1 Population growth and variation among nations
- 5.2 Population explosion- family welfare program
- 5.3 Environment and human health
- 5.4 Human rights
- 5.5 Value education
- 5.6 HIV / AIDS
- 5.7 Women and child welfare

5.8 Role of information technology in environment and human health

5.9 Case studies

### **6.0 Mine Dust and different diseases**

State various types of mine dust, their formation

Describe occupational diseases like pneumoconiosis, silicosis, asbestosis, nystagmus, epidermophytosis, ankylostomeasis, radiation hazards etc-their causes and preventive measures.

#### **RECOMMENDED BOOKS:**

- 1) Textbook of Environmental studies, Erach Bharucha, UGC
- 2) Fundamental concepts in Environmental Studies, D D Mishra, S Chand & Co Ltd
- 3) Text book of Environmental Studies by K.Raghavan Nambiar, SCITECH Publication Pvt. Ltd.
- 4) Environmental Engineering by V.M.Domkundwar- Dhanpat Rai & Co.
- 5) Environmental Engineering & Safety by B.K.Mohapatra.
- 6) EMT-II & III by D.J. Deshmukh

# MINE SURVEY – III

## MNT-502

L/wk T/wk P/wk  
4 0 0

Period per Week: 04 Total Marks: 100

Total Periods

Lecture: 44

Evaluation Scheme

Theory:

End Term Exam : 70

Teacher Assignment : 10

Class Test : 20

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Total 100 Marks

### TOPIC WISE DISTRIBUTION OF PERIODS (Theory)

<u>Sl.No.</u>	<u>Topic</u>	<u>Periods</u>
1.	Tacheometry	05
2.	Triangulation & Trilateration	08
3.	Co-relation of Surface & Underground Survey	08
4.	Setting out curves	05
5.	Stope surveying	05
6.	Simple Problems on Dip, Fault, strike, Boreholes, Drift etc.	08
7.	Remote Sensing	<u>05</u>
		<b>44</b>

### RATIONALE

Before starting the actual mining operation, it is essential for mining engineer to first survey the piece of land where mining operation is contemplated. This is not possible without the knowledge of mine surveying.

### OBJECTIVES

On completion of the subject, students will be able to :

1. Comprehend principle of tachometry & its application in measurement of distance.
2. Explain principle of triangulation & trilateration.
3. Explain principles of correlations by different methods.
4. Define various terms in connection with curve setting, laying out of curves by different methods.
5. Explain different methods of stope surveying, transfer of stope faces to mine Plan.
6. Transfer mines grid co-ordinate to open pit face, laying out of faces in open pits, fixations of bench parameters, transfer of R.L. to each bench floor, determine overall pit slope angle.
7. Solve simple problems on dip, fault, strike, borehole, drifts etc.
8. Modern Surveying with the use of remote sensing.

### COURSE CONTENTS (Based on specific objectives)

#### 1.0 Tacheometry

- 1.1 Define stadia & its principle.
- 1.2 Explain diaphragm, reticules, tacheometer, instruments constants.

1.3 Find out height & distance from stadia intercepts, tangential systems, movable hair method.

## **2.0 Triangulation and Trilateration.**

2.1 State purpose & principle involved in triangulation & trilateration method.

2.2 Classify various methods of triangulation survey primary, secondary & tertiary colliery triangulation.

2.3 Develop concept about reconnaissance survey. Describe methods of measuring angle, types of theodolite used in triangulation survey.

2.4 Describe the methods of base line measurement using E.D.M.

2.5 Define tape correction.

2.6 State construction of triangulation station of permanent nature.

## **3.0 Correlation of surface and underground survey**

3.1 State direct correlation by traversing & optical methods.

3.2 Describe orientation by wires in two shafts.

3.3 Explain correlation by mines in vertical shafts.

3.4 State co-planning/ alignment, weissbach triangle weis-quadrilateral methods, precise magnetic correlation.

## **4.0 Setting out curves**

4.1 State elements of curves.

4.2 Define designation of curves, simple, compound & reverse curves.

4.3 Explain setting out of surface & underground curves by chords & offsets, chords and angle, tangent and offset, plate layers method.

4.4 Describe various setting out by chain & one theodolite, two theodolites.

4.5 Define super elevation, transition and vertical curves.

## **5.0 Stope Surveying**

5.1 Explain tape triangulation, instrumental survey.

5.2 Determine stope face.

5.3 State preparation of stope planes, plotting the stope station, plotting of stope face to the mine plan.

5.4 Find out area of extraction by Planimeter and calculation of triangle thereof.

## **6.0 Simple problems on Dip, Fault, Strike, Borehole, Drifts.**

6.1 Solve various numerical problems related to dip, strike, fault, borehole & drifts.

## **7.0 Remote sensing & its application.**

7.1 Study of Total Station and GPS.

## **RECOMMENDED BOOKS**

1. Plane & Geodetic Survey – D.Clerk
2. Surveying E. Mason – Vol.I & II
3. Metalliferous Mine Surveying – F.Winniberg
4. U.M.S. Vol.-III & Extra Lesions.
5. Mineral Economics – R.K.Sinha & N.L.Sharma
6. Basics of remote sensing and G.I.S. by Dr. S.Kumar.

# MINE LEGISLATION & GENERAL SAFETY-II

## MNT-503

L/wk T/wk P/wk

4 0 0

Period per Week: 4

Total Periods:

Lecture: 44

Total Marks: 100

Evaluation Scheme

Theory:

End Term Exam : 70

Teacher Assignment : 10

Class Test : 20

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Total 100 Marks

### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Topic	Period
1.	M.M.R. 1961	08
2.	Mines V.T.Rules 1966	04
3.	Mines Creche Rules	02
4.	Maternity Benefit Act	02
5.	Mines Accident & Safety	08
6.	Forest Conservation Act (FCA) 1980	03
7.	Environmental Protection Act 1986	06
8.	MMRD & MCR	06
9.	Classified circulars (DGMS)	<u>05</u>
		<b>44</b>

### RATIONALE

Since Mining operations involve frequent accidents, it is very important for a mining engineer to be thoroughly conversant with various acts & rules framed for providing safety to workers.

### OBJECTIVES

On completion of the above topics, students will be able to :

1. Describe various aspects of M.M.R. 1961.
2. Describe various aspects of Mines Vocational Training Rules 1966.
3. Describe various aspects of Mines Creche Rules 1966.
4. Describe various aspects of Maternity Benefit Act.
5. Describe various aspects of Mines Accident & Safety.
6. Describe various aspects of Forest Conservation Act (FCA) 1980.
7. Describe various aspects of Environmental Protection Act 1986.

### COURSE CONTENTS (Based on specific objectives)

#### 1.0 Metalliferous Mines Regulations 1961

- 1.1 Discuss various provisions of Metalliferous Mines Regulations 1961.

#### 2.0 Mines V.T. Rules 1966

- 2.1 Discuss various provisions of Mines V.T. Rules 1966.

#### 3.0 Mines Creche Rules 1966

- 3.1 Discuss various provisions of Mines Creche Rules 1966.

#### 4.0 Maternity Benefit Act

- 4.1 Discuss various provisions of Maternity Benefit Act.

## **5.0 Mines Accident & Safety**

- 5.1 Discuss their classification, causes & prevention.
  - 5.2 Develop concept about accident cost, accident report, procedure for conducting an enquiry to ascertain the causes of accidents.
  - 5.3 Discuss procedure for investigation & reporting Mine accident, accident proneness, fatality rate, frequency rate & severity rate.
  - 5.4 Explain role of supervision in accident prevention, accident due to opencast workings, statistical analysis of accidents, accident statistics, its head & method of data processing.
  - 5.5 Develop basis concepts of safety, safety & productivity, safety consciousness & safety campaign, safety organization, safety audit.
  - 5.6 Describe rules of safety committee.
  - 5.7 Explain the role of workmen inspectors.
  - 5.8 Discuss terms like industrial fatigue, preventive maintenance, productive equipments & duties of Safety Officer.
- 6.0 Forest Conservation Act (FCA) 1980.**
- 6.1 Discuss various provisions of Forest Conservation Act (FCA) 1980.
- 7.0 Environmental Protection Act 1986**
- 7.1 Discuss various provisions of Environmental Protection Act 1986.
- 8.0 MMRD Act & MCR Rules**  
Various provisions of Mineral conservation & exploitation.  
National Mineral policy.
- 9.0 Classified Circulars (DGMS)**
- 9.1 As amended up-to-date.

## **RECOMMENDED BOOKS**

1. M.M.R.- 1961
2. Mines V.T.Rules- 1966
3. Mines Creche Rules- 1966
4. Maternity Benefit Act
5. Pit Head bath Rules
6. Worker's compassion Act
7. Environmental Protection Act-1986
8. DGMS Circulars



# MINE ENVIRONMENT & HAZARDS

## MNT-504

L/wk T/wk P/wk

4 0 0

Period per Week: 4 Total Marks: 100

Total Periods

Lecture: 44

Evaluation Scheme

Theory:

End Term Exam : 70

Teacher Assignment : 10

Class Test : 20

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Total 100 Marks

### TOPIC WISE DISTRIBUTION OF PERIODS (Theory)

<u>Sl.No.</u>	<u>Topic</u>	<u>Periods</u>
1.	Mine gases & gas testing	04
2.	Emission of firedamp in U/g coal mines	04
3.	Mine fires & spontaneous heating	08
4.	Mine Explosion	08
5.	Mine Inundation	06
6.	Mine lighting & Illumination	03
7.	Noises & Vibration	03
8.	EIA & EMP	04
9.	Rescue apparatus	<u>04</u>
		<b>44</b>

### RATIONALE

As a Mining Engineer, one must be thoroughly conversant with various sources of mining hazards as also the remedial measures needed to be undertaken to avoid any mishap.

### OBJECTIVES

After completion of the subject, students will be able to:

1. Testing of different mine gases. Physiological effect on miners, detection of fire dump by flame safety lamp, explain the method of gas testing by CO-detectors & methanometers.
2. Explain how firedamp is emitted in mines.
3. Explain causes of mine fires & spontaneous heating.
4. Define explosion, explain causes & elaborate necessary steps required for prevention of coal dust & firedamp explosion.
5. Define mine inundation, explain causes & elaborate necessary preventive measures required.
6. Describe lighting arrangement, lighting standards explain glare & its effect
7. Explain the effect of noise & vibration on miners & mine structures & other surface structure.
8. Develop concept about EIA & EMP.
9. Rescue Apparatus.

### COURSE CONTENTS (Based on specific objectives)

#### 1.0 Mine gases & gas testing

- 1.1 Testing of different mine gases, their properties and physical effects .
- 1.2 State firedamps, black damp, stink damp, white damp and after damp in mines.
- 1.3 Describe flame safety lamp & its working principle.
- 1.4 Explain gas testing by flame safety lamp by accumulation test & percentage state.

- 1.5 State precaution for gas testing.
  - 1.6 Describe various parts of combustion tube flame safety lamp, special features.
  - 1.7 State limitations of flame safety lamp.
- 2.0 Emission of firedamp in U/g workings**
- 2.1 Describe gradual exudation, blower & outbursts of firedamp in U/g workings.
- 3.0 Define fires & spontaneous heating**
- 3.1 Describe causes & factor affecting spontaneous heating.
  - 3.2 Define incubation period.
  - 3.3 State preventive measures against spontaneous heating.
  - 3.4 Explain CO/O<sub>2</sub> ratio & CO<sub>2</sub>/O<sub>2</sub> ratio.
- 4.0 Mine Explosion**
- 4.1 Describe coal dust & fire damp explosion with their causes & prevention.
  - 4.2 State inflammability of coal dust & fire damp.
  - 4.3 Explain Coward's diagram.
  - 4.4 State prevention, suppression & treatment of dust.
  - 4.5 Describe sampling of dust in Mines.
  - 4.6 Stone dust barrier.
- 5.0 Mine Inundation**
- 5.1 State sources of water in mines & its danger.
  - 5.2 State precaution against inundation.
  - 5.3 Describe burnsidess safety boring apparatus.
  - 5.4 State precaution while approaching water logged area.
  - 5.5 Describe water dams- its construction & design. (Without derivation of formula)
  - 5.6 Explain water danger plan.
- 6.0 Mine lighting & illumination**
- 6.1 State effect on safety level of illumination at different working places at mines with reference to D.G.M.S. circulars.
- 7.0** Explain the effect of noise & vibration on miners & mine structures & other surface structure.
- 8.0 EIA & EMP(ENVIRONMENTAL IMPACT ANALYSIS & ENVIRONMENTAL MINE PLAN)**
- 8.1 Describe allowable concentration of pollutants in industrial & domestic sectors as per the standards of MOEF & CPCB.
  - 8.2 Explain necessity of preparation of EIA & EMP for environmental clearance of a mining project from the government agency.
- 9.0 Rescue apparatus, Proto-iv, Proto-v, Draeger BG-174, Self rescuer, Smoke helmet, Gas mask.**

## RECOMMENDED BOOKS

1. Mine Ventilation – G.B.Mishra
2. EMT-II & III – D.J.Desmukh
3. Coal Mine Practices – E.Mason
4. UMS Vol-I
5. A Critical Study of Indian Mining Legislation – Rakesh Prasad.
6. Mine Rescue-M.A.Ramlu

# MINE MACHINERY – I

## MNT-505

L/wk T/wk P/wk  
4 0 0

**Total Marks: 100**

**Total Periods: 04**  
**Lecture: 44**

**Evaluation Scheme**

**Theory:**

**End Term Exam : 70**

**Teacher Assignment : 10**

**Class Test : 20**

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**Total 100 Marks**

### TOPIC WISE DISTRIBUTION OF PERIODS

<u>Sl.No.</u>	<u>Topic</u>	<u>Periods</u>
1.	Wire ropes	10
2.	Rope Haulage	10
3.	Headgear	03
4.	Cage & shaft fittings	04
5.	Winding drum	04
6.	Friction Winding	05
7.	Skip Winding	04
8.	Pit top & Bottom Layout	<u>04</u>
		<b>44</b>

### RATIONALE

It is imperative that a Mining Engineer should be thoroughly conversant with various types of machine used in mining operations.

### OBJECTIVES

On completion of the subject, students will be able to:

1. Describe type & construction of wire, their uses, maintenance & related calculation.
2. Describe different types of transportation methods in mines.
3. Explain headgear's functions & its design factors.
4. Describe constructional & safety features of cage and shaft.
5. Describe different profiles of winding drum, various safety devices & related calculations.
6. Describe different types of friction winding & its function.
7. Explain skip-winding arrangements.
8. Draw various arrangements at pit top & pit bottom layouts.

### COURSE CONTENTS (Based on specific objectives)

#### 1.0 Wire Ropes

- 1.1 State the types of wire ropes used in Mines.
  - 1.1.1 Describe constructional features of wire ropes & lay of wire ropes.
- 1.2 Define factor of safety to wire ropes nominal & actual factor of safety of wire ropes.
  - 2.2.1 State factors influencing the F.O.S.

- 1.3 State efficiency of rope construction, space factor & cross sectional area rope.
- 1.4. State factors affecting deterioration of ropes.
- 1.5 Describe care & maintenance of ropes.
- 1.6 State & describe testing & examination of wire ropes.
- 1.7 Give the procedure of splicing of wire rope
- 1.8 Describe rope capel for haulage winding & recapping.

## **2.0 Rope Haulage**

- 2.1. Transportation in mines by rope haulage.
  - 2.1.1 State type of rope haulage.
  - 2.1.2 Describe various types of rope haulage with simple sketches.
  - 2.1.3 State & describe different type of safety devices on rope haulage roadways.
  - 2.1.4 State & describe different types of clips & couplings.

## **3.0 Headgear**

- 3.1 State function of headgear.
- 3.2 Describe constructional features of headgear pulley.
- 3.3 Define angle of fleet.

## **4.0 Cage and shaft fittings**

- 4.1 Describe cage, cage suspension gear, detaching hooks & its function, safety catch at headgear & keps.
- 4.2 State types of guide.
- 4.3 State & describe rigid guide, flexible shoes, guide rope suspension & tensioning arrangement.

## **5.0 Winding drum**

- 5.1 State different profiles of winding Drum.
- 5.2 Describe different types of winding brake.
- 5.3 Describe various types of safety devices on winding system.

## **6.0 Friction Winding**

- 6.1 State & describe principle & constructional features of ground-mounted & tower-mounted koepe winder.
- 6.2 State advantages & disadvantages of koepe winding.
- 6.3 Describe multirope system of koepe winding.

## **7.0 Skip winding**

- 7.1 Describe constructional features bottom discharge skip, Top discharge skip.
- 7.2 Compare skip winding cage winding.

## **8.0 Pit top & Pit bottom circuit layout**

- 8.1 State factors affecting pit top & pit bottom layouts.
- 8.2 Describe different types of pit top & pit bottom car/tub circuit layouts.

## **RECOMMENDED BOOKS**

1. Mine hoisting – Dr. M.A.Ramulu
2. SME Mining Engg Hand Book
3. Material Handling in Mines, IIT Khargpur
4. EMT III – D.J.Desmukh
5. Mine Transport – N.T.Kerlin
6. UMS Volume.

**MINE SURVEY – III LAB**  
**MNP-501**

L/wk T/wk P/wk  
**0 0 06**

**Total Marks: 100 Marks.**

**Periods per week: 06**  
**Total Periods: 66**

**Evaluation Scheme**  
**Practical:**  
**End Exam.: 50 Marks**  
**Sess.: 50 Marks**  
**Total Marks : 100**

1. Fix triangulation and measurement of peripheral and hub angles. Base line measurement applying all corrections and plotting by co-ordinates.
2. Determine the north.
3. Set out curves by Total Station and Theodolites.
4. Correlate underground and surface survey during survey camp.
5. Measurement of Horizontal & Vertical angles, measurement of distance by Total Station.
6. Mining lease boundary survey using Total Station .
7. Base line fixation using Total Station.
8. Coordinate point shifting and reference point shifting by Total Station .
9. Fixation of control point by 02 traversing (both Horizontal and Vertical control points) with Total Station and auto level.
10. Topographic survey & existing features.
11. Area calculation using software.
12. Volume calculation using software.
13. GPS Survey.
14. Preparation of plan and section using AUTOCAD.
15. DGPS Survey.
16. Reserve calculation of Ore.

(Student will go for a survey camp to a suitable place for conducting survey work).

# MINING ENVIRONMENT & HAZARDS - LAB

## MNP-502

L/wk T/wk P/wk  
**0 0 06**

**Total Marks: 50**

**Period per week: 06**  
**Total Periods: 66**

**Evaluation Scheme**  
**Practical**

**End Term Exam: 25 Marks**  
**Sess. : 25 Marks**

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**Total Marks : 50 Marks**

1. a) Estimation of CH<sub>4</sub> in air sample using flame safety lamp and detection by a methanometer.  
b) Accumulation & percentage test of CH<sub>4</sub> by flame safety lamp. 12P
2. Study & use of different types of methonometer. 6 Periods
3. Determination of CO by using CO-dectector. 6 Periods
4. Determination of CO<sub>2</sub> in air sampling by CO<sub>2</sub> detectors. 6 Periods
5. Gas analysis by (I) Orsat apparatus. 6 Periods
6. Haldane apparatus for gas analysis. 6 Periods
7. Study & uses of Konimeter. 6 Periods
8. Sampling of dust by gravimetric dust sampler. 6 Periods
9. Study of Rescue Apparatus. 6 Periods
10. Multi gas Detector (NO<sub>x</sub>, H<sub>2</sub>S, CO, CO<sub>2</sub>) 6 Periods

# **MINE MACHINERY – I LAB.**

## **MNP-503**

L/wk T/wk P/wk

0 0 06

**Total Marks: 50 Marks.**

**Period per week: 06**

**Total Periods: 66**

**Evaluation Scheme**

**Practical:**

**End Term Exam: 25 Marks**

**Sess.: \_\_\_\_\_ : 25 Marks**

**Total Marks : 50 Marks**

- |     |  |     |
|-----|--|-----|
| 1.  | Study of Wire rope.  | 6 P |
| 2.  | Study of rope splicing.  | 6 P |
| 3.  | Study of rope cappel.  | 6 P |
| 4.  | Study of safety hook.  | 6 P |
| 5.  | Study of keps.   | 6 P |
| 6.  | Study of guide in shaft.   | 6 P |
| 7.  | Study of clips used in endless rope haulage.                                     | 6 P |
| 8.  | Model Development of Headgear Structure.   | 6 P |
| 9.  | Model Development of Suspension Gear.  | 6 P |
| 10. | Model Development of different types of winding drum.                            | 6 P |
| 11. | Model development of different types of safety devices used in haulage roadways. | 6 P |

# **INDUSTRIAL TRAINING REPORT & SEMINAR**

## **MNP-504**

**Total Marks:50**

**Evaluation Scheme  
practical**

**Sess.: : 50 Marks**  
**Total Marks : 50 Marks**

Students will go to different Mines for practical Training during 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> & 5<sup>th</sup> semester for a period of 4 weeks (30 days). After returning from training they have to submit training reports touching all aspects of mining & related operations i.e. geology, survey, drilling, blasting, methods of work, ventilation, support, transportation & any problem in Mines detected by them. This will be followed as per curriculum. Their report will be evaluated by conducting seminar & viva voce tests. Training report will not be accepted without training certificate from the Mine Manager concerned. During Seminar as per convenience Technical persons will be called.