

| MINING AND MINE SURVEYING         |  |   |             |
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|                                   |  | NAME OF COURSE- Introduction to Mining Engineering        |             |
| RGPV(DIPLOMA WING)BHOPAL          |  | OCBC19  | FORMAT<br>3 |
| BRANCH -MINING AND MINE SURVEYING |  | NAME OF COURSE : Introduction to Mining Engineering /7221 | SEMESTER -I |
| COURSE OUTCOME<br>1               | Able to summarise the mineral wealth and mining industries.  |   |             |
| LEARNING<br>OUTCOME-1.1           | Able to locate various mining operations in india  | 8 Hrs   | 10          |
| CONTENTS                          | Types of major minerals, Characteristic features and usage of major minerals.<br>Geographic locations of major mineral deposits in India, development of mining industry over the years.Terms used in mining operations and mines.   |   |             |
| METHOD OF<br>ASSESSMENT           | Internal: Mid Semester Exam - Pen paper test/Assignment  |   |             |
| LEARNING<br>OUTCOME-1.2           | Interpret the roles and responsibilities of different agencies in mining industry.   | 8 Hrs   | 08          |
| CONTENTS                          | Major government, semi-government, autonomous and private industries in Mining.Roles and responsibilities of different agencies in mining industry such as Ministry of Mines, State government ,department of mines, ministry of environment and forest, DGMS, CMRI, Indian Bureau of Mines,Geological Survey of India, etc. |   |             |
| METHOD OF<br>ASSESSMENT           | External : End semester Examination-Pen Paper Test   |   |             |
| COURSE OUTCOME<br>2               | To select different methods of access used in the mines and shaft sinking  |   |             |
| LEARNING<br>OUTCOME 2.1           | Able to compare various modes of entry in mines.   | 8 Hrs   | 08          |
| CONTENTS                          | Selection of site for opening a Mine.<br>Different types of modes of entry in mines – adit, Incline and shaft.<br>Conditions suitable to selection of a suitable mode of entry.<br>Factors governing shape, size and site of modes of entry.<br>Comparison, suitability and advantages of each mode of entry.                |   |             |
| METHOD OF<br>ASSESSMENT           | Internal: Mid Semester Exam - Pen paper test/Assignment  |   |             |
| LEARNING<br>OUTCOME 2.2           | Sketch a cross section of different modes of entry in mines.   | 8 Hrs   | 10          |
| CONTENTS                          | Cross section of different modes of entry in mines.  |   |             |
| METHOD OF<br>ASSESSMENT           | Internal : Task /Experiment performance in lab   |   |             |
| LEARNING<br>OUTCOME 2.3           | Able to summarise various shaft sinking methods and its lining.  | 8 Hrs   | 10          |
| CONTENTS                          | Sinking of shaft in normal coal strata.<br>Surface plant and equipment required for shaft sinking.<br>Temporary lining , Permanent lining of shaft sides.Introduction of special methods of shaft sinking – casion method, freezing method, Cementation method.  |   |             |

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| METHOD OF ASSESSMENT | External : End Semester Theory Exam - Pen paper test  |       |    |
| COURSE OUTCOME-3     | Able to summarise Drilling associated activities  |       |    |
| LEARNING OUTCOME-3.1 | Able to compare various modes drilling .  | 8 Hrs | 08 |
| CONTENTS             | Objectives of drilling.<br>Methods of drilling – Percussive and rotary drilling.<br>Diamond drilling, Surface arrangement of Diamond drilling.<br>Surface drilling, drilling for exploration.<br>Types of drill bit.  |       |    |
| METHOD OF ASSESSMENT | Internal: Mid Semester Exam - Pen paper test/Assignment   |       |    |
| LEARNING OUTCOME 3.2 | Sketch and describe different types of drill bits used in mines.  | 8 Hrs | 15 |
| CONTENTS             | Different types of drill bits used in mines.  |       |    |
| METHOD OF ASSESSMENT | Internal : Task /Experiment performance in lab  |       |    |
| LEARNING OUTCOME-3.3 | Able to Illustrate the core recovery.   | 8 Hrs | 08 |
| CONTENTS             | Core recovery – Single tube core barrel and double tube core barrel.  |       |    |
| METHOD OF ASSESSMENT | External : End Semester Theory Exam - Pen paper test  |       |    |
| LEARNING OUTCOME 3.4 | Able to Interpret the bore hole survey.   | 8 Hrs | 08 |
| CONTENTS             | Bore hole survey – introduction, methods of bore hole survey - Etch method using hydrofluoric acid, Carlson compass .<br>Bore hole survey instruments – Tropari instrument, bore hole camera.   |       |    |
| METHOD OF ASSESSMENT | External : End Semester Theory Exam - Pen paper test  |       |    |
| COURSE OUTCOME-4     | Able to summarise mine explosives in blasting.  |       |    |
| LEARNING OUTCOME-4.1 | Able to contrast the explosive, detonators and shot firing tools.   | 8 Hrs | 10 |
| CONTENTS             | Definition of explosives, Properties o Explosives.<br>High Explosive & Low explosive, their comparison.<br>Permitted explosives their types, composition.<br>Detonators, common type of detonators - plain detonators, ordinary electric detonators and delay detonators their construction, uses, comparison etc. low tension & high-tension detonators. Advantages of delay detonators.<br>Safety fuses, detonating cords, detonating relays. Shot firing tools, exploders. |       |    |
| METHOD OF ASSESSMENT | Internal: Mid Semester Exam - Pen paper test/Assignment   |       |    |
| LEARNING OUTCOME4.2  | Sketch and describe the various types of detonator.   | 8 Hrs | 15 |
| CONTENTS             | Common type of detonators - plain detonators, ordinary electric detonators and delay  |       |    |

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|                      | detonators  |       |    |
| METHOD OF ASSESSMENT | Internal : Task /Experiment performance in lab  |       |    |
| LEARNING OUTCOME-4.3 | Able to explain the solid blasting.   | 8 Hrs | 10 |
| CONTENTS             | Solid blasting, conditions to be satisfied before doing solid blasting, advantages of solid blasting, drilling patterns used with solid blasting. Misfires, causes, remedy and method of relieving, dealing with misfires. Blown out shots & blown through shots. Causes and precautions. |       |    |
| METHOD OF ASSESSMENT | External : End Semester Theory Exam - Pen paper test  |       |    |
| COURSE OUTCOME-5     | Able to compare various mining methods .  |       |    |
| LEARNING OUTCOME 5.1 | Able to sketch surface mining methods.  | 8 Hrs | 10 |
| CONTENTS             | Open cast mining – Suitability, advantages and disadvantages.<br>Classification of Open cast mining – manual quarrying, semi mechanized and mechanized quarrying.<br>Quarriable limit .   |       |    |
| METHOD OF ASSESSMENT | Internal: Mid Semester Exam - Pen paper test/Assignment   |       |    |
| LEARNING OUTCOME 5.2 | Able to compare the underground mining methods.   | 8 Hrs | 10 |
| CONTENTS             | Underground mining -Main classifications of method of working coal<br>a) Bord & Pillar – applicability, advantages and disadvantages.<br>b) Long wall – applicability , classification – advancing, retreating.<br>Comparison between bord & pillar and longwall mining method.           |       |    |
| METHOD OF ASSESSMENT | External : End Semester Theory Exam - Pen paper test  |       |    |
| LEARNING OUTCOME 5.3 | Draw layout of different method of mining.  | 8 Hrs | 10 |
| CONTENTS             | Bord & Pillar mining method.<br>Longwall mining method– advancing, retreating.  |       |    |
| METHOD OF ASSESSMENT | Internal : Task /Experiment performance in lab  |       |    |
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