Subject Code : P8AG7

ENGINEERING GEOLOGY, MINING GEOLOGY AND ORE DRESSING

UNIT 1

Engineering Geology: The role of Geology in Civil Engineering . engineering properties of rocks – Strength and elastic properties. Properties of building stones, concrete aggregates and rail road ballast.
Types of earth movements – Land slides, their causes, Classification and preventive measures.
Geological investigations pertaining to the foundation of bridges, buildings highways and airfields

UNIT 2

Types of Dams – Geological investigations of Dam sites. Dam construction - problems – remedial measures. Spill ways, reservoir problems. Tunnels: problems relating to tunneling in hard and soft grounds. Geological investigations proceeding tunneling. Geological investigations pertaining to harbours, docks and coastal erosion.

UNIT 3

M**ining geology:** Mining terms and their descriptions. Sampling - Principles – Types of sampling – Collection & preparation of samples;
Drilling: Types of drills – methods of drilling – geological logging. Explosives-Blasting – Rock excavations. Methods of stoping. Ventilation. Haulage. Shafts and shaft sinking.
Assaying and evaluation of ore-bodies and their extensions-ore reserve estimation.
Alluvial mining: panning, sluicing, hydraulicking, drift mining and dredging. Opencast mining: Mine machinery-power shovel, bucket wheel excavator, conveyor and spreader. Types of mining- Glory hole, Kaolin mining, Granite mining, sand mining, stripping.

UNIT 4

Subsurface mining (or) Under ground mining;-Stoping : Open stopes – supported stopes, shrinkage stopes. Caving;-Top slicing-sub level caving –block caving. Ground water control – Mine ventilation
Coal Mining: Prospecting and planning – underground mining –Room and pillar method – long wall (advancing & retreating) method –Pillar robbing-Hydraulicking – Power source roofing – transportation; strip mining of coal – Augering-cleaning –Grading – Shipping – Future trends in India.
Mining and environment, Mitigation of mining hazards. Factors controlling the choice of various mining methods.

UNIT 5

Ore dressing: Principles and scope of mineral dressing; Physical and chemical properties of minerals as applied to mineral dressing.
Size reduction Fundamentals – Preliminary breaking – Jaw crushers – Gyratory crushers and Stamping; - Fine grinding – Wet and dry – Ball Mills;- Size separation –Screening –Sieve scale, Grizzlies , Vibrating screens;- Settling- Principles of settling, free settling hindered settling, gravity concentration;- Jigs;- Rakes Classifiers; - shaking tables – Wilfley tables – principles of magnetic separation and Electrostatic separation; - Floatation – Definition, principle and application, –Frothing agents – collecting agents –
Dispersing agents –floatation Machines – Floatation practice and Filtration.

TEXT BOOKS:

1. Krynine, D.P. and Judd, W.R. 1957 principles of Engineering Geology and Geotochniques, Mcgraw Hill.
2. Legget, R.F. 1962 Geology and Engineering , McGraw Hill
3. Gokhale K.V.G.K and Rao, D.M .1981 Experiments in Engineering Geology, Mcgraw Hill.
4. Arogyaswamy, R.N.P. 1973 Courses in Mining Geeology, Oxford &IBH, New Delhi.
5. Higham, S 1951 An introduction to Metalliferous mining, Lord
6. Gokhale, K.V.G.K and Rao, T.C. 1978 Ore deposites of India distribution and processing, Thomson.
7. Mc Kinstry, H.E 1960 Mining Geology, New york.

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1. Fox, C.S 1949 Engineering Geology, New York
2. Blyth, F.C. 1979 A Geology for Engineers, ELBS
3. Gauding, A.M. 1939 Principles of Mineral Dressing , McGraw Hill.
4. Thamus, P.J. 19790 An introduction to mining, Methun.
5. Taggart, A.E. Elements of ore dressing.
6. Stanton, R.L. 1972 Ore Petrology, Mcraw Hill.