

# AMMS03 MINING GEOLOGY-I

## UNIT-1 DEFINITION OF GEOLOGY

- 1.1 Branches of Geology- Importance of Geology in Mining- Interior of the earth- Weathering, Erosion, Denudation, Geological processes.
- 1.2 Ground water- Origin and occurrence- Hydrological cycle- Sources of water in Mines
- 1.3 Classification of rocks based on porosity and permeability- Water table and types of Ground water- Geological controls on ground water movement in mines.
- 1.4 Crystallography: Characteristics of Crystals- Laws of Crystallography- Classification and study of crystal systems.

## UNIT-2 MINERALS

- 2.1 Definition of mineral- Classification of minerals
- 2.2 Physical and chemical properties of minerals
- 2.3 Study of Silicate structures individual minerals.

## UNIT-3 MINERALOGY

- 3.1 Study of individual groups- Quartz
- 3.2 Feldspar- Pyroxenes- Amphiboles
- 3.3 Micas- Aluminum silicates- Garnets- Olivine.

## UNIT-4 OPTICAL MINERALOGY

- 4.1 Ordinary light and Polarized light- Reflection,
- 4.2 Refraction, double refraction- Polarizing and Ore microscopes
- 4.3 Polarizer and analyzer- Thin sections and polished sections
- 4.4 Examination of the minerals under the microscope- Optical properties- Pleochroism, Extinction, Interference colors.

## UNIT-5 PETROLOGY

- 5.1 Igneous petrology- Rocks , 3 fold classification- Origin, form, structures,
- 5.2 Textures and classification of igneous rocks
- 5.3 Bowen's reaction principle. Study of rocks- Granite, syenite, gabbro, pegmatite, dolerite.

## UNIT-6 SEDIMENTARY PETROLOGY

- 6.1 Formation, structures, textures and classification of sedimentary rocks
- 6.2 Petro graphic characteristics of conglomerate, breccia, sandstone, shale, limestone
- 6.3 Metamorphic petrology- Formation, structures, textures and classification of metamorphic rocks, Petrography of gneiss, schist, slate, marble, quartzite, charnockite.

## Reference Books

1. Engineering Geology – Parbin Singh