II B.Tech I Sem

15ACE06-ENGINEERING GEOLOGY

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UNIT I

Introduction:

Importance of geology from Civil Engineering point of view. Brief study of case histories of failure of some Civil Engineering constructions due to geological draw backs.

Weathering Of Rocks : Its effect over the properties of rocks importance of weathering with reference to dams, reservoirs and tunnels weathering of common rock like "Granite"

Mineralogy :

Definition of mineral, Importance of study of minerals, Different methods of study of minerals. Advantages of study of minerals by physical properties.Role of study of physical properties of minerals in the identification of minerals. Study of physical properties of following common rock forming minerals: Feldspar , Quartiz , Flint , Jasper, Olivine , Augite ,Orthoclase Hornblende , Muscovite, Biotite, Asbestos, Chlorite , Kyanite , Garnet, Talc , Calcite. Study of other common economics minerals such as Pyrite, Hematite, Magnetite, Chrorite , Galena , Pyrolusite , Graphite, Magnesite, Barytes and Bauxite.

UNIT II

Petrology:

Definition of rock: Geological classification of rocks into igneous, Sedimentary and metamorphic rocks. Dykes and sills, common structures and textures of Igneous. Sedimentary and Metamorphic rocks. Their distinguishing features, Megascopic study of Granite, Dolerite, Basalt, Pegmatite, Laterite, Conglomerate, Sand Stone, Shale, Limestone, Gneiss, Schist, Quartzite, Marble and Slate.

UNIT III

Ground Water , Earth Quake &Land Slides:

Ground water, Water table, common types of ground water, springs, geological controls of ground water movement, ground water exploration. Earth quakes, their causes and effects, shield areas and seismic belts. Seismic waves, Richter scale, precautions to be taken for building construction in seismic areas. Land slides, their causes and effect; measures to be taken to prevent their occurrence. Importance of study of ground water, earth quakes and land slides.

UNIT IV

Structural Geology:

Out crop, strike and dip study of common geological structures associating with the rocks such as folds, faults un conformities, and joints – their important types. Their importance Insitu and drift soils, common types of soils, their origin and occurrence in India

Geophysical Studies:

Importance of Geophysical studies Principles of geophysical study by Gravity methods. Magnetic methods, Electrical methods. Seismic methods, Radio metric methods and Geothermal method. Special importance of Electrical resistivity methods, and seismic refraction methods.

UNIT V

Geology Of Dams , Reservoirs And Tunnels:

Types of dams and bearing of Geology of site in their selection, Geological Considerations in the selection of a dam site. Analysis of dam failures of the past. Factor"s Contributing to the success of a reservoir. Geological factors influencing water Lightness and life of reservoirs. Purposes of tunneling, Effects of Tunneling on the ground Role of Geological Considerations (ie. Lithological, structural and ground water) in tunneling over break and lining in tunnels.

Text Books:

1. Engineering Geology by N.Chennkesavulu, Mc-Millan, India Ltd. 2005
2. Engineerring geology by vasudev kanthi, Universities press, Hyderabad.
3. Engineering Geology by D.Venkata Reddy, Vikas Publications, New Delhi.

Reference Books:

1. Engineerring geology by Prabin singh, Katson Pubilcations
2. Engineering Geology by Subinoy Gangopadhyay, Oxford University press.
3. Principals of Engineering Geology by K.V.G.K. Gokhale – B.S publications
4. F.G. Bell, Fundamental of Engineering Geology Butterworths, Publications, New Delhi, 1992
5. Krynine & Judd, Principles of Engineering Geology & Geotechnics, CBS Publishers & Distribution,
6. Engineering Geology by Mukarjee, World Press.
7. Foundations of Engineering Geology by Tony Waltham, Special Indian Edition, CRC Press New Delhi.