

ENGINEERING GEOLOGY

Paper Code: ETCE-211

Paper: Engineering Geology

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INSTRUCTIONS TO PAPER SETTERS:

Maximum Marks: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

Objectives: To expose various geological formations and processes involved such as weathering, erosion etc. Further the concepts of structural geology and photogeology have been discussed for their relevance in the field of Civil Engg. This subject also includes causes, effects and measurement of earthquakes and seismic zoning map of India. The course aims at identifying appropriate sites for civil engineering projects such as Dams, Bridges, Tunnels etc., based on geological factors.

UNIT I

Introduction: Definition and scope of geology, its importance to Civil Engineers, Interior of earth, earth movement.

Rocks and minerals: Physical properties of minerals and their occurrence and uses, Classification and occurrence of rocks, Building and ornamental stones.

Geological processes: Weathering of rocks, agents of weathering, products of weathering, soil formation, soil profile, Erosion by running water, winds and glaciers.

[T1,T2][No. of Hours: 11]

UNIT II

Structural Geology: Stratification, Altitude of formation, dip, strike, apparent dip, Faults, folds, joints and their engineering importance.

[T1,T2][No. of Hours: 10]

UNIT III

Hydrogeology: Definition, source of ground water, ground water storage and circulation. Quality of ground water, hot water springs.

Introduction of Engineering Seismology: Earthquakes and its causes and effects, waves generated, basic terminology, Earthquakes and its measurements, Distribution of earthquakes in the World and in India, Seismic Zoning map of India.

[T1,T2][No. of Hours: 11]

UNIT IV

Photogeology: Aerial photographs, their importance in the field of civil engineering, stereoscope and its use.

Dams and Reservoirs: Geological investigations for dams and reservoirs. Examples of dam failures due to geological causes, Geological study for selecting site for dam and reservoir.

Bridges, highways and buildings: Geological investigations.

Tunnels through rocks: Definition. Purposes for tunneling, Geological background for selecting a site for a tunnel.

Landslides: Definition, causes and effects. Types of landslides, Preventive measures.

[T1,T2][No. of Hours: 12]

Text Books:

[T1] D. Vankat Reddy, "Engineering Geology", Vikas Publications

[T2] P.C.Varghese, "Engineering Geology for Civil Engineers", PHI Publications

References Books:

[R1] Bangar, "Principles of Engineering Geology", Standard Publishers and distributors

[R2] Kesavulu, "Textbook of Engineering Geology", Macmillan India Ltd

[R3] Dona, Mineralogy, Willey Eastern Limited, 1992

[R4] Hries and Watson, "Engineering Geology",

[R5] Tirifethen Van, "Geology of Engineering", Nebard

[R6] Kanithi, "Engineering Geology", University Press