



QUESTION BANK

Year / Semester: **II B.Tech IV Semester**

Regulation: **R23**

Subject and Code: **ENGINEERING GEOLOGY (23CIV242T)**

SYLLABUS

Course Objectives:

- To know the importance of Engineering Geology to the Civil Engineering.
- To enable the students, understand what minerals and rocks are and their formation and identification.
- To highlight significance/ importance/ role of Engineering Geology in construction of Civil Engineering structures.
- To enable the student, realize its importance and applications of Engineering Geology in Civil Engineering constructions.
- Concepts of Ground water and its geo physical methods

UNIT-I:

Introduction: Branches of Geology, Importance of Geology in Civil Engineering with case studies, weathering of rocks, Geological agents, weathering process of Rock, Rivers and geological work of rivers.

UNIT-II

Mineralogy And Petrology: Definitions of mineral and rock-Different methods of study of mineral and rock. Physical properties of minerals and rocks for megascopic study for the following minerals and rocks. Common rock forming minerals: Feldspar, Quartz Group, Olivine, Augite, Hornblende, Mica Group, Asbestos, Talc, Chlorite, Kyanite, Garnet, Calcite and ore forming minerals are Pyrite, Hematite, Magnetite, Chlorite, Galena, Pyrolusite, Graphite, Chromite, Magnetite and Bauxite. Classification, structures, textures and forms of Igneous rocks, Sedimentary rocks, metamorphic rocks, and their megascopic study of granite varieties, (pink, gray, green). Pegmatite, Dolerite, Basalt etc., Shale, Sandstone, Lime Stone, Laterite, Quartzite, Gneiss, Schist, Marble, Khondalite and Slate.

UNIT-III

Structural Geology: Strike, Dip and Outcrop study of common geological structures associating with the rocks such as Folds, Faults, Joints and Unconformities- parts, types, mechanism and their importance in Civil Engineering.

UNIT-IV

Ground Water: Water table, Cone of depression, Geological controls of Ground Water Movement, Ground Water Exploration Techniques.

Earth quakes and Landslide's: Terminology, Classification, causes and effects, Shield areas and Seismic belts, Richter scale intensity, Precautions of building constructions in seismic areas. Classification of Landslides, Causes and Effects, measures to be taken prevent their occurrence at Landslides.

Geophysics: Importance of Geophysical methods, Classification, Principles of Geophysical study by Gravity method, Magnetic method, Electrical methods, Seismic methods, Radiometric method and Electrical resistivity, Seismic refraction methods and Engineering properties of



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rocks.

UNIT-V

Geology of Dams, Reservoirs and Tunnels: Types and purpose of Dams, Geological considerations in the selection of a Dam site. Geology consideration for successful constructions of reservoirs, Life of Reservoirs. Purpose of Tunnelling, effects, Lining of Tunnels. Influence of Geology for successful Tunnelling.

COURSE OUTCOMES:

On successful completion of this course the students should be able to:		POs related to COs
CO1	Understand the significance of geological agents on Earth surface and its significance in Civil Engineering.	PO1,PO2,PO3,PO5
CO2	Identify and understand the properties of Minerals and Rocks.	PO1,PO2,PO3,PO5
CO3	Understand the concepts of Ground water and its geophysical methods.	PO1,PO2,PO3,PO5
CO4	Classify and measure the Earthquake prone areas, Landslides and sub side net practice the hazard zonation.	PO1,PO2,PO3,PO5
CO5	Investigate the project site for mega/mini civil engineering projects and site selection for mega engineering projects like Dams, Reservoirs and Tunnels.	PO1, PO2, PO3,PO4,P5

Textbooks:

1. Engineering Geology by N.Chenna Kesavulu, Laxmi Publications.2ndEdn2014.
2. Engineering & General Geology by Parbin Singh Katson educational series 8th2023.

References:

1. Engineering Geology by Supino Gango pad hay Oxford University press 1st edition, 2012.
2. Engineering Geology by D. Venkat Reddy, Vikas Publishing, 2nd Edn, 2017,
3. Geology for Engineers and Environmental Society' Alan E Kehew, 3rd edn., 2013) Pearson publications.
4. 'Environmental Geology' (2013) K.S. Valdiya, 2nd ed., Mc Graw Hill Publications.

Web Materials:

1. <http://nptel.iitm.ac.in/video.php?subjectId=105105106>
2. <http://nptel.iitm.ac.in/video.php?courseId=1055&p=1>
3. <http://nptel.iitm.ac.in/video.php?courseId=1055&p=3>



SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

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Max Marks: **10**

S.No.	CO	Questions	BT
Unit I: INTRODUCTION			
1	1	a. Define geology? b. Define weathering? c. Write the types of weathering? d. What are the three main geological processes performed by rivers? e. Which agent is most responsible for chemical weathering?	L4
2	1	a. Define geology and list out the different branches of geology? b. State importance of geology in civil engineering?	L3
3	1	Explain the brief study of some civil engineering constructions due to geological drawbacks.	L4
4	1	Describe the role of geology in the design and construction of dams, tunnels, and highways	L3
5	1	Describe the different branches of geology and their relevance to civil engineering?	L5
6	1	What is weathering? Enumerate the various mechanisms of rock weathering?	L4
7	1	What are the main types of geological agents? And explain chemical weathering.	L3
8	1	Discuss physical weathering in detail and explain the natural factors responsible.	L5
9	1	Why is the river the most important geological agent? What are the limitations of other geological agent like wind, glacial and ocean?	L4
10	1	Describe the three types of weathering with appropriate examples and processes involved.	L3
11	1	a. Explain the three main geological processes performed by rivers: erosion, transportation, and deposition. b. Explain chemical and biological weathering.	L3



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S.No.	CO	Questions	BT
Unit II: MINERALOGY AND PETROLOGY			
1	2	a. Define mineral? b. Define rock? c. Write examples of igneous rock. d. Write examples of sedimentary rock. e. Write examples of metamorphic rock.	L4
2	2	Define mineral and explain the various physical properties of minerals?	L3
3	2	a. Explain different methods of study of minerals b. Discuss the following important properties which are useful for the identification of minerals? i)Form ii)Luster iii)Specific gravity iv)Degree of transparency	L4
4	2	a. Write the physical properties of Feldspar and Quartz? b. Write the physical properties of Graphite and Pyrite?	L3
5	2	a. Write the physical properties of Olivine and calcite? b. Write the physical properties of Bauxite and Chlorite?	L5
6	2	Define term “rock”. Describe the classification of rocks.	L4
7	2	a. Describe the various types of Structures associated with Igneous rocks b. Write short note on megascopic study for the following rocks i)Granite ii)Basalt	L3
8	2	a. Describe the various types of Structures associated with sedimentary rocks. b. Write short note on megascopic study for the following rocks i)Sand stone ii)Lime stone	L5
9	2	a. Describe the various types of Structures associated with metamorphic rocks . b. short note on megascopic study for the following rocks i)Quartzite ii)Marble	L4
10	2	a. What are the main types of igneous rocks based on their formation? b. Describe the megascopic properties of pegmatite and Dolerite	L3
11	2	a. Write the physical properties of Biotite mica and muscovite mica. b. Write the physical properties of Galena and Magnetite.	L4



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S.No.	CO	Questions	BT
Unit III: STRUCTURAL GEOLOGY			
1	3	a. Define fold? b. Define fault? c. Define joint? d. Define unconformity? e. Define term strike?	L4
2	3	a. Explain the terms strike and dip. b. Define fold? Explain the different parts of folds with the help of neat sketches?	L3
3	3	a. Explain the major types of folds with the help of neat sketches? b. Importance of folds in civil engineering point of view.	L4
4	3	a. Classify and describe the different types of faults? b. Importance of faults in civil engineering point of view.	L3
5	3	a. What are joints? Discuss the various types of joints. b. Importance of joints in civil engineering point of view.	L5
6	3	a. What is an Unconformity? Describe different types of unconformities. b. Write a note on the Importance of unconformity?	L4
7	3	a. Explain the different parts of folds with the help of neat sketches? b. Explain the following terms: i) Anticline And Syncline ii) symmetric and asymmetric fold	L3
8	3	What are the important parts of a fault? How do they help in identifying fault types in the field?	L5
9	3	a. Differentiate between joints and faults. How are joints classified? b. Classify and describe the different types of joints .	L4
10	3	Discuss the overall importance of understanding structural features like folds, faults, joints, and unconformities in civil engineering projects.	L3
11	3	Explain how unconformities are identified in the field and their importance in geological mapping.	L3



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S.No.	CO	Questions	BT
Unit IV: GROUND WATER, EARTHQUAKES AND LAND SLIDES, GEOPHYSICS			
1	4	a. Define the term Ground water? b. Define an earthquake? c. Define landslides? d. Name any four geophysical methods. e. State the principle of the gravity method.	L4
2	4	Explain the process of formation of ground water table.	L3
3	4	Importance of various geological factors which influence the movement of ground water	L4
4	4	Various geological ,geophysical and hydrological factors taken into consideration while carrying out ground water exploration.	L3
5	4	a. Define an earthquake. And classify it. b. What are the causes and effects of earthquakes?	L5
6	4	a. Compare the tectonic activity with shield areas and seismic belts. b. Describe the precautions of building constructions in seismic areas?	L4
7	4	a. Define landslides. And explain classification of earth movements b. What are the causes and effects of landslides?	L3
8	4	a. What are the measures to be taken their occurrence at Landslides. b. Describe Gravity method in terms of the principle, physical property, procedures, equipment and uses	L5
9	4	a. What is the importance of Geophysical methods. b. Classification of Geophysical methods and explain any one	L4
10	4	a. Describe Magnetic method in terms of the principle, physical property, procedures, equipment and uses. b. Describe Radiometric method in terms of the principle, physical property, procedures, equipment and uses.	L3
11	4	a. Describe Electrical method in terms of the principle, physical property, procedures, equipment and uses. b. Describe Seismic method in terms of the principle, physical property, procedures, equipment and uses	L3



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S.No.	CO	Questions	BT
Unit V: GEOLOGY OF DAMS, RESERVOIRS AND TUNNELS			
1	5	a. What is a dam? Mention any two types of dams. b. Define reservoir c. What is tunneling? d. Name any two geological considerations for selecting a dam site. e. What is the importance of tunnel lining?	L4
2	5	What are the parts of a dam, types of dams and different purposes of dam construction?	L3
3	5	What are the geological considerations for selecting a suitable dam site?	L4
4	5	Discribe and discuss the following: i)Geological consideration in the successful reservoir ii) Life of reservoir	L3
5	5	a. Write the purposes of tunneling b. What are the effects of tunneling on the ground?	L5
6	5	What is meant by lining? Discuss the lithological and structural reasons that necessitate lining.	L4
7	5	On the basis of the geological background discuss the suitability or unsuitability of common igneous, sedimentary and metamorphic rocks for tunneling.	L3
8	5	What is the role of ground water in the success of tunneling?	L5
9	5	Describe the geological consideration for successful tunneling	L4
10	5	What is overbreak in tunneling? How is different from a pay line?	L3
11	5	Explain the role and importance of geological structures at the tunnel site.	L3