SHRI ANGALAMMAN COLLEGE OF ENGINEERING AND TECHNOLOGY

(An ISO 9001:2008 Certified Institution)
Siruganoor, Tiruchirappalli – 621 105.

FS 81504

DEPARTMENT OF CIVIL ENGINEERING

CE-1201 Applied Geology

Unit-1
Part-A

1. What are the branches of geology?
2. Define Aquifer and types.
3. What is weathering?
4. Explain the term physical and chemical weathering.
5. List of depositional landforms created by a river.
6. Differentiate between water table and perched water table.
7. How are river terraces formed?
8. What are sand dunes?
9. Define erosion.
10. What are alluvial deposits?
11. Give a coastal protection structures
12. What is perched water table
13. Distinguish between confined aquifer and unconfined aquifer.
14. Distinguish between magnitude and intensity of the earth quake?
15. What are the movements of the oceans?
16. Give the structure and composition of the earth.

Part-B

1. Write short note on:
    a) Crust
    b) Mantle
    c) Core
    d) Stratosphere
    e) Atmosphere
2. Explain briefly about Branches of Geology?
3. Discuss in detail the physical and weathering process of rocks and add a note on its merits and demerits in civil engineering.

4. How Groundwater formed? Describe the different types of aquifers and porosity. Give a note on ground water exploration methods.
5. Describe the types of weathering in details?
6. Write short notes on:
    A) Hydraulic action
    B) Cavitation
    C) Abrasion
    D) Attrition
    E) Corrosion
7. Explain the causes, classification of earthquake? Explain the earthquake belts in India.
8. a) Explain the geological work of river
    b) Explain the geological work of wind

9. Write critical essay on weathering and its significance in engineering construction?
10. a) Briefly explain the process of weathering?
    b) Briefly explain the internal and structure and composition of earth.

Unit-II
Part-A

1. What is Axis of symmetry?
2. Write the uses of clay minerals.
3. What are the Physical properties of minerals? Define Steak?
4. How will you classify the coal based on its calorific value?
5. With examples from the mineral kingdom, describe the characteristics of orthorhombic system and its symmetry elements.
6. What is Moh's scale of hardness of minerals?
7. What are the factors controlling the specific gravity, porosity, and strength of the rocks/
8. List the varieties and properties of mica.
9. Write the symmetry elements of normal class of Isometric System.
10. What are the important uses of calcite?
11. What are the diagnostic characteristics of Kaolinite and Illite clay minerals
12. What you meant by cleavage.
13. Name at least four clay minerals and their important engineering properties.
14. What are ores?
15. What are the symmetry elements?
16. What are the chemical compositions in feldspar group.

Part-B

1. What are the principle components of identifical of minerals? Give examples.
2. How is coal formed? Describe the different types of coal and its properties.
3. Explain briefly about physical properties minerals?
4. Give the physical properties which helps to identify in the field for the following minerals
    a) Augite
    b) Calcite
    c) Hornblende
    d) Biotite
5. Explain the following rock forming minerals
    a) Quartz family
    b) Feldspar family
6. What are the principal components of identification of minerals? Give examples.
7. Define symmetry elements and holohedral forms of crystal.
8. Describe the axial characters, symmetry elements holohedrals forms and types mineral of normal class of orthorhombic system.
9. Describe the following: a) Feldspar family of minerals b) Cavity filling deposits.
10. a) Write short notes on i) Symmetry ii) Crystallographic axis.
    b) Define the following terms i) Parameter ii) indices iii) Symbols iv) Forms

Unit-III

Part-A

1. Name any two metamorphisms.
2. What are the metamorphic rocks?
3. Write the any two plutonic rocks?
4. Describe the composition, texture, occurrences and uses of "black Granite".
5. Differentiate between basalt and quartzite.
6. List the texture encountered in sedimentary rocks.
7. Distinguish between Granite and Gneiss.
8. Differentiate between conglomerates from breccia.
9. What are the laboratory tests to determine the engineering properties of rocks?
10. What you mean by Dykes?
11. What are the textures of sedimentary rocks?

12. Differentiate between magma and lava.
13. List the tests to be carried out determine the properties of building stones.
14. Bring out the essential differences between the engineering properties of granite and slate.

Part-B

1. Describe the various engineering properties of rocks and test to be carried out to determine these characteristics.

2. Describe the Composition, Texture, Mechanical properties, Origin and use of Granite Basalt Limestone and Slate.

3. Explain the rock forming minerals a) quartz family b) feldspar family.

4. Explain in detail the various physical properties of the minerals

5. What is the rock strength? Discuss the engineering properties of rocks

6. How rocks are classified? Give the main characteristics and classification of igneous, sedimentary and metamorphic rocks with example

7. Describe the physical properties of minerals that help in their identification in the field give example.
8. Describe the physical properties of minerals that help in their identification in the field for following minerals a) augite b) calcite c) hornblende d) biotite

9. Describe the various engineering properties and description of basalt, shale, gabbro and conglomerate, syenite, reccias, slate and marble

10. Describe the various field and laboratory test to be carried out to determine the various parameters of Rock strength and their Mechanical Properties.

Unit IV

Part-A

1. Explain “grade bedding”.
2. What is normal fault?
3. What is meant by Geological map?
4. Define dip and Strike?
5. List at least four differences between anticlines and synclines.
6. Describe the Wenner’s configuration of electrodes in electrical resistivity surveys.
7. Explain why the Geological map of a dam site or tunnel is useful to a civil engineer.
8. Describe the recumbent fold and overturn fold structures.
9. What are joints in rocks?
10. Name the device used in seismic survey.
11. What are joints? List their engineering significance.

Part-B

1. What are folds? How are they classified? Give its engineering importance.
2. Describe in detail the seismic and electrical methods used in civil engineering investigation.
3. Classify and describe joints structures with neat sketches. Add a note on their role in tunnel and dam construction
4. What is the fault? Describe with sketches the terminology of various types of faults. Add a note on their engineering properties.
5. Explain the seismic methods of Geophysical Surveys for civil engineering investigation.
6. Explain the seismic methods of Sub-Surface for civil engineering investigation.
7. Give a detailed account various geological structures and their role in selection of sites for engineering Projects.
8. Define the terms folding in rocks? Explain engineering significance of folds.
9. Define the terms faulting in rocks? Explain engineering significance of faults.
10. Discuss in detail the folds in rocks and their significance in construction of dams and tunnels.

Unit-V
Part-A

1. What is Remote sensing?
2. Explain the terms parallax and overlap in aerial photographs.
3. List at least four methods to prevent landslides.
4. What is aerial mosaic?
5. Explain the causes of landslides.
6. What is Stand up time and play line in Dam construction?
7. What are the types of aerial photographs?
8. Differentiate between Swelling and Running ground in construction site.
9. What is bridging capacity in tunnel construction?
10. Differentiate aerial photograph from satellite imagery.
11. Give a coastal protection structures.
12. What is sea wall.

Part-B

1. Describe in detail the destructional work of the sea along coast. Give an account of the different methods of coastal protection.
2. Describe the geological conditions necessary for the construction of dams and bridges
3. Describe the causes of landslides. Mention various applications Remote Sensing in civil engineering works
4. Describe the geological conditions necessary for the construction of tunnels
5. What are the various geological factors to be considered for the construction of dams and reservoirs? Explain each factor in detail with examples from India and abroad.
6. Explain in detail the role of Aerial photographs and Satellite Images in planning and execution of civil Engineering Projects
7. Define the term tunnel. Explain the different methods of tunneling with sketches to show how tunnels can be located in a highly disturbed area.
8. Write a essay on Remote Sensing, techniques and its advantages
9. Describe various types of landslides, its causes and prevention Mention the various applications of Remote Sensing in civil engineering Projects.