MOTHER THERESA INSTITUTE OF ENGINEERING & TECHNOLOGY
PALAMANER – 517408
ENGINEERING GEOLOGY (9A01505) QUESTION BANK

UNIT - I

1. (a) Discuss the relationship between the Engineering Geologists and Civil Engineers.
   (b) Describe the importance of Engineering Geology in Civil Engineering.
2. Describe the various branches of Engineering Geology?
3. Describe briefly few case studies of civil engineering failures due to geological drawback.
4. Write the importance of physical geology & structural geology.
5. What is meant by weathering of rocks? Explain in detail different geological agents responsible for weathering of rocks.
6. Describe the weathering due to air & water in detail.
7. Explain physical weathering in detail.
8. Explain frost weathering.
9. Explain chemical & biological weathering.
10. (a) What is meant by “meandering of a river”?
    (b) Explain the development of a meander with neat sketches.
11. “The knowledge of geology is very essential at planning stage, design stage and construction stage of any Civil Engineering project”. Justify this statement with a reference to a Dam site selection.

Define

1. Engineering Geology
2. Environmental Geology
3. Shortcrete
4. Rock mechanics
5. Geomechanics
6. Mining Geology and Petroleum Geology
7. Deflation
8. Abaration
9. Attrition
10. Pedestal rock
11. Vintifact
12. Hydraulic action.
13. Pot holes

UNIT – II

1. How can you identify a mineral by the help of their physical and chemical properties?
2. Add notes on the following physical characteristics that are useful for the identification of rocks and minerals.
   (i) Colour (ii) Streak (iii) Hardness (iv) Form
3. (a) Define Mineral. How are the minerals classified?
   (b) Explain the physical properties of the following minerals.
   i. Feldspar ii. Hornblende iii. Talc iv. Biotite
4. Explain the significance of different Physical properties in mineral identification.
5. On the basis of silicate structure, classify silicate minerals into various groups. Explain the structure of each group in detail.
6. Explain the following principles of mineral identification.
   a. Hardness b. Twining

SHORT NOTES:

1. Quartz
2. Feldspars
3. Micas
4. Calcite or Gypsum
5. Kyanite
6. Chlorite
7. Talc
8. Calcite
9. Clay Minerals
10. Bauxite.

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UNIT – III

1. Discuss thoroughly about the structures of Igneous Rocks. (Illustrate your answer with neat diagrammatic sketches)
2. Discuss what you know the processes of Sedimentation.
3. With the help of neat diagrammatic sketches, describe briefly on Primary Sedimentary Structures.
4. Write about the various sedimentary deposition environments.
5. Briefly describe the classifications of igneous rocks based on silica percentage, silica saturation and depth of formation. Quote suitable examples.
6. Explain how the sedimentary rocks are formed. Describe the various structures present in these rocks.
7. Differentiate between
    a. Sandstone and Shale
    b. Shale and Limestone
    c. Conglomerate and Breccia.
    d. Quartzite and Marble
    e. Gneiss and Schist
    f. Gneiss and Slate.

SHORT NOTES

1. GRANITE
2. GABBRO
3. SAND STONE
4. LIME STONE
5. GENISS
6. DIORITE
7. SCHIST
8. DOLOMITE
9. QUARTZITE
10. EVAPORITE

UNIT – IV

1. Discuss the various geological deformities and importance.
2. Explain the attitudes of geological structures.
3. Explain briefly a. Fold b. Fault c. Joint.
4. Define fold and explain various parts of fold with neat sketches and causes of folding. Describe over turned fold drag fold, recumbent fold.
5. Classify and describe the different types of faults. Give the various minor structures found in the fault zones. Discuss the effects of faulting on various engineering projects.
6. Explain the structure of a. Fold b. Fault.
7. Explain the importance of fold in civil engineering.
8. Explain the importance of fault in civil engineering.
9. With the help of neat diagrammatic sketches, describe briefly on Faults.
10. With the help of neat diagrammatic sketches, describe briefly on Folds.
11. From an Engineering Geological point of view, define Joints.
12. Discuss thoroughly about the Rock Joint Description in relation to Engineering Geological investigation of rock materials.

SHORT NOTES

1. Unconformities
2. Disconformity
3. Non conformity
4. Unloading joints
5. Cooling joints
6. Fan Fold.
7. Columnar joints
8. Angular unconformity
9. Radial faults
10. Joints due to the regional deformation

UNIT – V

1. What is a water table and what are the types of ground water which occurs in the zone of aeration and saturation.
2. Discuss the various Groundwater movements.
3. Write about Geological controls on Groundwater Movement.
4. Explain the following investigations to be carried out in ground water exploration
   (a) Geological Investigations (b) Geophysical Investigations
   (c) Hydrological investigations.
5. Discuss, in brief, the causes and effects of earthquakes. In this connection enumerate some of the major Indian earthquakes and comment on the possible mode of origin.
6. Write a short account on Earthquake Belt and Seismic Zone.
7. Explain about the Earthquake prediction.
8. (a) Discuss briefly on groundwater investigation.
   (b) Explain about the water in rocks.
9. Write a short account on Zonal Distribution of Groundwater.
10. Write an essay on Classification and Causes of Earthquakes? Describe the Civil Engineering Considerations in Seismic Areas with reference to building construction.

SHORT NOTES:

1. P-waves
2. L-waves
3. Vadose water
4. Aquifer
5. Unconfined aquifer
6. Confined aquifer
7. Artesian aquifer
8. Fresh and salt groundwater
9. Solifluction
10. Debris Slide
11. Creep
12. Indirect Causes of Landslide.

UNIT – VI

1. Explain the following Geophysical methods.
   (a) Seismic methods. (b) Geothermal methods.
2. Describe the principle of gravity method with the help of a neat sketch. What are the different parameters measured? Also explain different kinds of gravity methods that are followed during the investigations.
3. Write about the various gravity methods of testing.
4. Write about the various electrical conductivity and resistivity methods.
5. What are Geophysical methods? Explain.
6. Describe briefly the classification of Geophysical methods.

SHORT NOTES

1. Seismic methods.
2. Geothermal methods.
3. Gravity methods.
4. Grating methods.

UNIT - VII

1. What are the Geological Considerations necessary in the selection of a Dam Site?
2. Discuss the foundation and abutment competency of rocks with reference to dams.
3. Explain the geological Causes for the Failure of Dams, with a few Case Histories.
4. Explain the geological factors influencing water tightness and life of reservoirs.
5. Discuss the influence of Geological Structures over Dams.
6. Write briefly about various dams basing upon their construction.
7. Explain the considerations of different types of rocks at the dam site construction.
8. Explain the effect of geological structures on dams foundation.

SHORT NOTES:

1. Brief on the structure of dam with a neat sketch.
2. Gravity dams.
3. Buttress dams.
4. Arch dams.
5. Earth dams.

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UNIT – VIII

1. What is tunnel? With the help of a well-labelled neat sketch, describe the parts of a tunnel.
2. Write an essay on geological considerations in the leakage of Reservoirs?
3. What is Overbreak? And lining discuss the influencing geological factors.
4. What is a tunnel? Explain the terms that are used in tunnels with neat sketches. Also explain the purpose of tunnelling.
5. (a) Mention the deteriorating effects produced in the ground during the excavation of tunnels.
   (b) Mention the variety of purposes served by tunnels.

SHORT NOTES:

1. Purposes of tunnelling.
2. Lining of tunnels.
3. Over break.
4. Different purposes of tunnels
5. Tunnels faulted strata
6. Tunnels in folded strata.
7. Strike and dip orientation.
8. Tunnels in Faulted formations.