

DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE
PERAMBALUR- 621212

UNIT -1 GENERAL GEOLOGY

PART –A

- 1 . To give the importance of geology in the field of civil engineering ?
- 2 .To list out the main and allied branches of geology ?
- 3 .Give short notes on:
 1. Crust of the earth
 2. SIAL and SIMA
 3. Mantle of the earth
 4. Asthenosphere
 5. Mohorovic discontinuous (or) Crust-Mantle discontinuous
 6. core of the earth
 7. NIFE
 8. Guten berg disconitnuity (or) Mantle-Core diconitnuity
 9. Seismic waves and types
- 4 . Wegener's concept of continental drift ?
- 5 . Define the "PANGAEA" and "PANTHALASSA" ?
- 6 . Define the "GONDWANALAND" and "LAURASIA" ?
- 7 . Harry Hess's concept of "Sea floor sprading" ?
- 8 . What is plate techtonics and various types of plate boundaries ?
- 9 . Define construction zones (or) Divergent boundaries ?
10. Define destruction boundaries (or) Subduction zone (or) convergent boundaries ?
11. Define conservation boundaries (or) Transform fault boundaries ?
12. Define "Island Arc" and "Trench"
13. What is meathing ? process of disintegration and decomposition ?
14. What is EROSION ?
15. Define denudation ?
16. Give short notes on:
 1. Exfoliation
 2. Spherodial meathering ?
 3. Pot holes
 4. Water falls
 5. Gorges
 6. Meanders
 7. Ox-bow lakes
18. Define Alluvial fans ?
19. Define flood plains /
20. Define Natural lenees (or) lenees ?
21. What is Deflation ?
22. Give short notes on:
 1. Ventifacts

2. Pedestal rock
23. Give short notes on :
 1. Sand dunes
 2. loess
24. Give short notes on :
 1. Bench
 2. spits
 3. Sand bars
 4. Tombolo
1. 25. Illustrate the physical properties and classification of feldspar group of minerals .
 1. Sae walls
 2. Groynes
 3. Jetties
26. What is an earthquake ?
27. Causes of earthquake ?
28. Define the various earthquake waves ?
29. Define the term “FOCUS” and “EPICENTRE”
30. what is meant by intensity and magnitude of an earthquake ?
31. What is groundwater ?
32. Give short notes on :
 1. Sinkhole
 2. Caverns
33. Define Aquifer and types ?
34. Define porosity and permeability

PART – B

1. Give an account of the internal structure and constitution of the earth.
2. Explain in brief the Wegener's theory of continental drift and give evidence that support this theory ?
3. What is the plate tectonics ? Describe the various types of plate boundaries ?
4. Explain the following in the context of plate tectonics
 1. Convection current hypothesis
 2. Theory of sea floor spreading
5. Distinguish between weathering and erosion . Describe the various processes of weathering in civil engineering ?
6. Discuss the geological work of wind respect of erosion , transportation and deposition ?
7. How do the rivers cause erosion , transportation and deposition ?
8. Describe in brief the geological work of sea with a note on the coast protection ?
9. Describe the occurrence of earthquake ?
10. Describe the various erosional and deposition features of the groundwater and groundwater prospecting ?
11. Differentiate between unconfined and confined aquifers . DESCRIBE THE ZONES (or) occurrence of underground water ?
12. Describe the earthquake belts in India ?

UNIT -2

PART –A

1. Write the symmetry elements of normal class of :
Isometric system , Tetragonal system , Hexagonal system , Orthorhombic system , Monoclinic system .
2. Define crystals , edges and solid angle ?
3. Define zone axis and interfacial angle ?
4. What is minerals ? List the various physical properties of minerals ?
5. Define rock forming and ore-forming minerals ?
6. Describe luster , hardness and habit in detail ?
7. Give the chemical composition and important physical properties of following minerals:
 1. Quartz
 2. Orthoclase
 3. Microcline
 4. Augite
 5. Hornblende
 6. Biotite
 7. Muscovite
 8. Calcite
 9. Garnet.
8. Define specific gravity ?
9. Write the classification of coal based on calorific value ?
10. Write the physical properties of calcite and garnet minerals ?
11. Define migration of petroleum /
12. Illustrate the physical properties and classification of feldspar group of minerals .
 1. Structural traps in oil
 2. Oil traps
 3. Reservoir rock
13. Define clay minerals ? important physical properties of kaolinite ?

PART – B

3. Describe the symmetry and forms of orthorhombic and monoclinic system .
4. Describe in brief the symmetry and forms of the “galena type” class of the isometric system .
5. Describe in brief the symmetry and forms of the “zircon type” class of the tetragonal system .
6. Write about the characteristic features of the crystallographic axes of all the six major crystal systems .
7. Difference between the tetragonal and hexagonal system .
8. Describe the physical properties of minerals with examples .
9. Illustrate the physical properties and classification of feldspar group of minerals .
10. Illustrate the physical properties and classification of quartz group of minerals .

11. Give the various theories about the origin of coal . out of the Indian occurrence of coal .
12. Describe in brief the origin and occurrence of petroleum . Where does the petroleum occur in India .

UNIT -3

PART – A

1. What are Igneous rock ? How are they formed in nature ?
2. Write a note on Maga and Lava ?

3. What do you understand by the terms texture and structure of igneous rocks .
4. Write short notes on :
 1. Sill and dykes
 2. Phacoliths and Batholiths
 3. Xenolithic structure and rock cycle
5. Give an account of porphyritic texture and ophitic texture.
6. Define sedimentary rocks ? How are they formed in nature ?
7. Give an account of their formation of texture and structures of sedimentary rocks .
8. Write short notes on :
 1. stratification and lamination
 2. breccia and conglomerate
 3. pisolitic structure and dolomitization
9. Give the types of texture and structure of metamorphic rocks ?
10. Define the process of metamorphism ?
11. Write short notes on :
 1. contact metamorphism and pneumatolysis
 2. hydrothermal and mylonite
 3. migmatite and mylonite
 4. gneiss and schistosity
 5. foliation and slaty cleavage
12. Difference between limestone and marble rocks ?
13. Difference between shale and slate ?
14. Difference between sandstone and quartzite ?
15. Define the granitization ?

PART – B

1. Classify igneous rocks into various groups . Give the tabular classification of igneous rocks ?
2. Explain the “ Bowen reaction ” series of magma crystallization .
3. Discuss elaborately the engineering properties of rocks and explain the procedures adopted to determine the engineering properties of rocks at site and laboratory ?
4. How are rocks classification ? Give the main characteristics and classification of igneous rocks . Give examples .

5. Describe the mode of occurrence , texture , chemical composition of minerals and varieties of “BASALT ”
6. Describe the mode of occurrence , texture , chemical composition of minerals and varieties of “GRANITE ”
7. What is sedimentary rocks ? Classify sedimentary rocks into various classes ?
8. Describe in detail the texture and structures of sedimentary rocks ?
9. Describe in detail the texture and structure of metamorphic rocks ?
10. what is metamorphic rock? Discuss the various agents of metamorphism?

UNIT-4

PART-A

1. Write illustrated notes on
 - i). Normal fault and Reverse fault
 - ii). Horst and Graben
 - iii). Master Joints and Colunar Jointing
2. Define "Thrust fault"
3. What is mean by Dip and Strike?
4. What do you mean by Hade, heave and throw in faults?
5. Explain the following terms,
 - i). Anticline and Syncline]
 - ii). Dome and Basin
 - iii). Recumbent folding
6. Define a fol.
7. Give a outline of parts of the folds.
8. Add a note on the engineering importance of fold.
9. Define Recumbent folding.
10. Define Rift valleys.
11. Write a note on "Inliners and Outliners".
12. What do you maen by conjugate folds?
13. Define Angular unconformity?
14. Write short notes on
 - i). core logs
 - ii). Wenner's arrangement
 - iii). Fan shooting
 - iv). Gravity anomaly and magnetic anomaly
15. Explain the following terms:
 - i). Refraction surveys
 - ii). Acoustic methods
16. Write short notes on
 - i). shear fold and drag fold
 - ii). Geosynclines
 - iii). Tension joints
 - iv). Hogback

PART-B

1. Classify and describe the different types of fold and describe the criteria for their recognition in the field?
2. How are faults recognized in the field? Describe the effects of the various types of faults on outcrops of strata.
3. Distinguish between joints and faults. Give the classification of faults and illustrate your answers with neat sketches.
4. Define unconformities. Classify the different types of unconformities.
5. What are Joints? classify and describe the various types of joints.
6. Explain the concept of stress and strain ellipsoid. How does this concept help in understanding the nature of rock deformation.
7. Describe the various geophysical methods of prospecting. Describe the electrical methods in detail.
8. Describe the specific methods of geophysical exploration used in ground-water survey.
9. Describe the self-potential and equipotential methods.
10. Describe the seismic methods of Refraction and reflection survey.

UNIT-5

PART-A

1. Define Tensile strength and shear strength.
2. Write short notes on
 - i). Abrasive Resistance
 - ii). Durability of a building stone
 - iii). seismic testing for sites
3. Explain the Brazilian test and Jach test.
4. Write brief notes on Resistivity log.
5. Prevention of land slides.
6. Define silting of reservoirs.
7. Explain overbreak in tunnels.
8. What are land slides? How are they caused?
9. Define Dams on bedded rocks.
10. Explain stability of bridges.
11. Explain brief notes on
 - i). Gully erosion
 - ii). soil permeability
12. Write short notes on
 - i). Wenner's arrangement
 - ii). Refraction surveys
 - iii). Gravity anomaly
13. Define Fan shooting.
14. Describe the salient features of
 - i). Arch dam
 - ii). Gravity dam
 - iii). Earth dam
15. What do you understand in "Dam Disaster"?

PART-B

1. Give a brief account of the importance of geology in civil engineering. Explain your answer by giving suitable examples.
2. What is tunnel? Describe the various geological problems met during the construction of tunnels both in the soft ground and in the hard ground rocks /
3. Give the importance of the geological survey of the dams and reservoirs. Outline the scheme of doing the geological investigation.
4. Describe the various geological factors which affected the stability of bridges.

5. Describe the problems that are met in constructing dams on bedded rocks , faults , and shales .
6. How are landslides ? How are they caused ? Describe the various methods of prevention of landslides ?
7. Describe the some common building stones , roofing stones and stones used for road metal ?
8. Give a brief account of the importance of remote sensing techniques in civil engineering ?
9. Describe the aerial photographs and satellite images . types of aerial photographs ?
10. Describe the sea erosion and coastal protection problems during the construction of civil engineering ?