



VALLIAMMAI ENGINEERING COLLEGE
SRM Nagar, Kattankulathur – 603 203
DEPARTMENT OF CIVIL ENGINEERING



SUBJECT CODE: CE6301

YEAR : II

SUBJECT NAME: ENGINEERING GEOLOGY

SEM : III

QUESTION BANK

(As per Anna University 2013 Regulation)

VALLIAMMAI ENGINEERING COLLEGE

UNIT I
PHYSICAL GEOLOGY

Geology in civil engineering – branches of geology – structure of earth and its composition – weathering of rocks – scale of weathering – soils - landforms and processes associated with river, wind, groundwater and sea – relevance to civil engineering. Plate tectonics – Earth quakes – Seismic zones in India.

PART-A

1.	Define engineering geology.	BT-1
2.	Describe briefly the layers of interior of earth.	BT-2
3.	State weathering.	BT-1
4.	What is meant by seismic zone and mention the zones?	BT-1
5.	Explain physical weathering?	BT-4
6.	Discuss about chemical weathering?	BT-4
7.	Describe spheroidal weathering?	BT-2
8.	Give detail about mohorovicic and Guttenburg discontinuity.	BT-1
9.	Write about plate tectonics and name a few secondary tectonic plates.	BT-5
10.	Give a short note on exfoliation and exudation.	BT-3
11.	Differentiate between water table and perched water table.	BT-2
12.	Define aquifer and mention its types.	BT-5
13.	Mention the importance of subduction zone and define?	BT-3
14.	Differentiate aquifer and aquiclude.	BT-4
15.	Write about Mercalli scale.	BT-6
16.	Discriminate the interior structure of the earth.	BT-6
17.	Write about confined aquifer and unconfined aquifer.	BT-1
18.	List the depositional landforms created by a river.	BT-2
19.	What is meant by continental drift?	BT-3
20.	Tell about base level of erosion?	BT-1

PART-B

1.	Write in detail about the structure of the earth and its composition with a neat diagram.	BT-6
2.	Give an account on mode of occurrence and prospecting of ground water.	BT-1
3.	Describe in detail about plate tectonics and its relevance to earthquake engineering?	BT-3
4.	Explain in detail about weathering of rocks add a note on the effect of weathering on the strength of rocks.	BT-2
5.	Give a detail about how earthquakes are caused and explain in detail about the earthquake belts of India.	BT-1
6.	Write in detail about the scope of geology and importance of geology in Civil Engineering.	BT-4
7.	Explain physical and chemical weathering process in detail. Add a note on weathering grade and its engineering significance.	BT-2
8.	Explain the process associated with river. Write their engineering significance.	BT-2
9.	Enumerate the process associated with winds. Write their engineering significance.	BT-3
10.	Briefly explain the process associated with sea. Write their engineering significance.	BT-4
11.	(i) Give a detailed account of the erosional and depositional landforms created by the action of river. (8) (ii) Give a detailed account of the erosional and depositional landforms created by the action of wind. (8)	BT-1
12.	Examine the geology of groundwater and types of groundwater; Enumerate the types of aquifers system.	BT-4
13.	(i) What are the deposits and features or landforms of river erosion? (8) (ii) Write down the features and landforms developed by marine erosion. (8)	BT-5
14.	Give a detailed account of groundwater occurrence in rocks. Add a note on the porosity and permeability of rocks.	BT-1

UNIT II
MINEROLOGY

Physical properties of minerals – Quartz group, Feldspar group, Pyroxene - hypersthene and augite, Amphibole – hornblende, Mica – muscovite and biotite, Calcite, Gypsum and Clay minerals.

PART-A

1.	Define mineralogy.	BT-1
2.	Define hexagonal, isometric, tetragonal, orthorhombic, triclinic, monoclinic system of crystals.	BT-1
3.	Examine the physical properties of mica.	BT-3
4.	Define mineral.	BT-4
5.	Explain the different physical properties of minerals	BT-6
6.	Give the physical properties and uses of quartz, augite.	BT-5
7.	What is moh's scale of hardness?	BT-4
8.	Discuss the physical properties and uses of hornblende, biotite.	BT-2
9.	Name at least 4 clay minerals and their important engineering properties.	BT-1
10.	What are physical properties of muscovite, calcite?	BT-4
11.	Define ore minerals.	BT-1
12.	Show the isometric system of crystals.	BT-3
13.	Define tetragonal system of crystals.	BT-1
14.	Design orthorhombic system of crystals.	BT-5
15.	Describe triclinic system of crystals.	BT-2
16.	Integrate monoclinic system of crystals.	BT-5
17.	Write about colour.	BT-6
18.	Define lusture.	BT-1
19.	Discuss about form, streak.	BT-2
20.	Write about hardness, fracture and specific gravity.	BT-6

PART-B

1.	Elaborate the various physical properties which help in identification of minerals.	BT-1
2.	List the physical properties of Quartz group of minerals. Explain it	BT-1
3.	What are the physical properties of Feldspar group of minerals? Describe it.	BT-1
4.	Describe the composition properties of (i) Plagioclase feldspar (ii) Orthoclase feldspar (iii) Microcline feldspar	(6) (5) (5) BT-1
5.	Give a detailed account on chemical composition, physical properties, origin, occurrence, engineering behavior and uses of clay minerals.	BT-3
6.	Distinguish between mica and feldspar group of minerals.	BT-2
7.	Differentiate between Mineral and Rock and Describe the physical properties of minerals with examples	BT-2
8.	Discuss the varieties, composition, properties, origin and Indian occurrences of coal.	BT-3
9.	Give a detailed account of physical properties and classification of coal.	BT-3
10.	Write the physical properties and importance of Augite & hornblende.	BT-4
11.	Briefly explain about the properties of muscovite and Gypsum.	BT-4
12.	Summarize the physical properties of Mica group of minerals with examples.	BT-4
13.	Generalize the composition properties of biotite & calcite and its Properties.	BT-5
14.	Explain in detail about crystallographic system.	BT-6

UNIT III
PETROLOGY

Classification of rocks, distinction between Igneous, Sedimentary and Metamorphic rocks. Engineering properties of rocks. Description, occurrence, engineering properties, distribution and uses of Granite, Dolerite, Basalt, Sandstone, Limestone, Laterite, Shale, Quartzite, Marble, Slate, Gneiss and Schist.

PART-A

1.	Define petrology and it's classification.	BT-1
2.	What is mean by metamorphism?	BT-1
3.	What are metamorphic rocks and classify?	BT-2
4.	What are igneous rocks and classify?	BT-2
5.	What are sedimentary rocks and classify?	BT-2
6.	Write about the occurrence of granite and basalt.	BT-6
7.	Give a brief note on stratification.	BT-5
8.	What is meant by RMR? What is its significance?	BT-1
9.	Differentiate between Gneiss and Schist?	BT-4
10.	Write the composition uses of shale, slate and marble.	BT-3
11.	Analyzethe structure of igneous rocks and its textures.	BT-4
12.	Write about the occurrence of sandstone.	BT-3
13.	Give the factors controlling the specific gravity, porosity and strength of rocks?	BT-6
14.	List out the tests to be carried out to determine the strength of building stones.	BT-2
15.	What is black granite? List its uses.	BT-1
16.	Bring out the differences between granite and slate.	BT-4
17.	What is ductility of rocks?	BT-1
18.	Define Lopoliths and dykes.	BT-1
19.	How igneous rocks are classified according to their occurrences?	BT-5
20.	Distinguish between limestone and shale?	BT-4

PART-B

1.	What are sedimentary rocks? Briefly explain about it.	BT-5
2.	Demonstrate about metamorphic rocks and its properties?	BT-3
3.	Define igneous rocks? Briefly explain about it	BT-1
4.	(i) Describe the engineering properties of rocks. (8) (ii) List the various field and laboratory tests to determine the engineering properties of rocks. (8)	BT-6
5.	What are the different types of rocks? Describe the major distinguishing properties the major rock types.	BT-4
6.	Classify the igneous, sedimentary and metamorphic rocks and explain it?	BT-2
7.	Give an detail about the mineral composition, structure, texture, origin, engineering properties and uses of (i) Basalt (5) (ii) Dolerite (5) (iii) Sandstone (6)	BT-1
8.	Describe the composition, texture, characteristics, occurrence and uses of black granite, Basalt, Marble.	BT-2
9.	Discuss about the composition, texture, characteristics, occurrence and uses of limestone, schist, Gneiss.	BT-2
10.	Write a short note on (i) Structure of igneous rocks (5) (ii) Structure of sedimentary rocks (5) (iii) Structure of metamorphic rocks (5)	BT-3
11.	Name the type of rock and describe composition, texture, characteristics, occurrence and uses of laterite, Slate, Quartzite.	BT-3
12.	What are the formations of igneous, sedimentary, metamorphic rocks?	BT-1
13.	Give a detail account on (i) Texture of igneous rocks (5) (ii) Texture of sedimentary rocks (5) (iii) Texture of metamorphic rocks (6)	BT-1
14.	Briefly explain about occurrence, distribution and uses of igneous, sedimentary, metamorphic rocks.	BT-4

UNIT-4**STRUCTURAL GEOLOGY AND GEOPHYSICAL METHODS**

Geological maps – attitude of beds, study of structures – folds, faults and joints – relevance to civil engineering. Geophysical methods – Seismic and electrical methods for subsurface investigations.

PART-A

1.	Define structural geology.	BT-1
2.	Define dip and strike.	BT-1
3.	Define recumbent fold and overturn fold.	BT-1
4.	Differentiate anticline and syncline.	BT-2
5.	Describe wenner's configuration of electrodes.	BT-1
6.	Tell about the joints. Explain their significance.	BT-1
7.	Evaluate the significance of folds.	BT-5
8.	Describe faults.Explain their significance.	BT-1
9.	Differentiate Wenner and berger methods.	BT-2
10.	Explain outcrops.	BT-6
11.	Write about true and apparent dips.	BT-6
12.	Classify the types of dips.	BT-2
13.	Write about geological map.	BT-3
14.	Describe the parts of folds with neat sketch.	BT-2
15.	Classify folds.	BT-4
16.	Write the causes of foldings?	BT-3
17.	Analyze the engineering considerations of a fold.	BT-4
18.	Analyze the engineering considerations of a fault.	BT-4
19.	Design the mechanisms of faulting.	BT-5
20.	Write about the origin of joints.	BT-3

PART-B

1	Describe the various types of faults and write about the engineering applications.	BT-1
2	Identify the various types of folds and write about the engineering applications.	BT-1
3	Explain about joints. Discuss the various types of joints and write about the engineering applications.	BT-3
4	Explain in detail the role of electrical methods of subsurface investigation in civil engineering practice.	BT-2
5	Evaluate the seismic refraction survey to be conducted for determining the depth of bed rock.	BT-5
6	Discuss in detail electrical method of investigation for ground water exploration.	BT-2
7	Classify folds and faults in rocks and explain how they influence the design of dams.	BT-4
8	Summarize about joint structures with neat sketches and also write their role in dam and tunnel construction.	BT-2
9	Identify the various geological structures and their role in selection of sites for engineering projects.	BT-1
10	(i) Illustrate the fault structures with neat sketches. (8) (ii) Write role of fault structures in dam and tunnel construction. (8)	BT-3
11	How the seismic refraction survey to be conducted and what are its application?	BT-4
12	Explain how faults and folds affect the choice of locations for tunnels.	BT-6
13	Examine the role of Seismic methods in civil engineering investigation.	BT-1
14	Analyze the Elementary Principles of Geological Mapping.	BT-4

UNIT - V**APPLICATION OF GEOLOGICAL INVESTIGATIONS**

Remote sensing for civil engineering applications; Geological conditions necessary for design and construction of Dams, Reservoirs, Tunnels, and Road cuttings - Hydrogeological investigations and mining - Coastal protection structures. Investigation of Landslides, causes and mitigation.

PART-A

1.	Define overlap	BT-1
2.	Describe the function of groynes in coastal protection?	BT-1
3.	What is meant by standup time in dam construction?	BT-1
4.	List any 4 methods to prevent landslides.	BT-1
5.	What is over break?	BT-1
6.	What are multipurpose dams?	BT-1
7.	Differentiate between swelling ground and running ground in Construction site.	BT-2
8.	Discuss about the pay line in dam construction.	BT-2
9.	Describe the term Parallax in aerial Photograph.	BT-2
10.	Write the Applications of Remote sensing.	BT-2
11.	Give the functions of Break water.	BT-3
12.	Classify the various types of aerial photographs.	BT-3
13.	Illustrate the coastal protection Structures.	BT-3
14.	Write the application of Satellite Imagery.	BT-4
15.	State the importance of overbreak and pay line in tunneling operations.	BT-4
16.	Explain how the study of bedrocks is essential before the construction of tunnels.	BT-4
17.	What are the few measures of coastal protection?	BT-5
18.	Generalize the causes of landslides.	BT-5
19.	Explain the term Landslide mitigation.	BT-6
20.	Discuss about sea wall and jetties in coastal protection Structures.	BT-6

PART-B

1.	What are the various geological factors to be considered for the construction of dams? Explain with examples.	BT-1
2.	Why jetties are built? And also explain in detail about sea erosion Structures.	BT-1
3.	List the geological factors to be considered for the construction of road cuttings. Explain in detail.	BT-1
4.	Describe the various geological factors to be considered for the construction of tunnels? Explain in detail with examples.	BT-1
5.	Differentiate between Dam and Reservoir and their applications.	BT-2
6.	Classify the various geological factors to be considered for the construction of buildings? Explain in detail with examples.	BT-2
7.	Summarize the shoreline structures with neat sketch.	BT-2
8.	Write in detail about (i) Landslides and their causative effects. (8) (ii) The measures to prevent landslides. (8)	BT-3
9.	Illustrate about the coastal protection structures with suitable sketches.	BT-3
10.	Analyze the hydrogeological investigation in mining.	BT-4
11.	Using case studies, describe (i) Various aspects of coastal erosion. (8) (ii) Various methods of coastal protection. (8)	BT-4
12.	Describe in detail about the role of aerial photographs and satellite images in planning and execution of civil Engineering projects.	BT-4
13.	Generalize the importance of hydrological Survey.	BT-5
14.	Explain in detail about the application in Remote sensing in civil engineering.	BT-6

VALLIAMMAI ENGINEERING COLLEGE**DEPARTMENT OF CIVIL ENGINEERING****GE6301: ENGINEERING GEOLOGY****QUESTION BANK-BT Allotment**

S.no	UNIT No.		BT1	BT2	BT3	BT4	BT5	BT6	Total Question
1	Unit-1	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
2	Unit-2	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
3	Unit-3	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
4	Unit-4	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14
5	Unit-5	Part-A	6	4	3	3	2	2	20
		Part-B	4	3	2	3	1	1	14

TOTAL NO. OF QUESTIONS IN EACH PART

PART-A	100
PART-B	70
TOTAL	170