INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad -500 043

CIVIL ENGINEERING

QUESTION BANK

Course Name	:	**ENGINEERING GEOLOGY**			
Course Code	:	A50188			
Class	:	III - B. Tech, I-Semester			
Branch		Civil Engineering			
Academic Year		2017-2018			
Course Structure	:	**Lectures**	**Tutorials**	**Practical's**	**Credits**
		4	1	-	4
Course Coordinator	:	Y. Ravi Kumar, Ch. Bala Krishna Assistant Professor, Civil Engineering Dept.			
Course Faculty	:	Y. Ravi Kumar, Ch. Bala Krishna, Assistant Professor, Civil Engineering Dept.			

OBJECTIVES

To introduce students to the basic concepts which are used for construction purpose to.

1. Learn about physical geology, structural geology, mineralogy and petrology.
2.Learn about minerals their physical properties and chemical composition.
3. Know the geological classification of rocks into igneous, sedimentary and metamorphic rocks.
4. Learn how geological structures like folds, faults, joints and unconformities are formed.
5. Know suitable site considerations for construction of dams, reservoirs and tunnels.

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	UNIT I		
PART - A (Short Answer Questions)			
1	What is mean by Engineering geology?	Understand	**1**
2	Explain the role of Weathering in geology	Understand	**1**
3	Define Petrology	Remember	**1**
4	Describe briefly the layers of interior of earth.	Remember	**1**
5	What is physical weathering?	Understand	**1**
6	What is chemical weathering?	Remember	**1**
7	What are Exogenous geological agents?	Remember	**1**
8	Define Structural Geology	Understand	**4**
9	List out few Failures of dams due to geological considerations	Remember	**1**
10	List out few Failures of Reservoirs due to geological considerations	Remember	**1**
11	Define denudation.	Remember	**1**
12	What is Paleontology?	Remember	**4**
13	What is Stratigraphy?	Remember	**4**
14	What are Endogenous geological agents?	Remember	**1**
15	Define Geophysics.	Understand	**1**
PART-B (Long Answer questions)			
1	Explain the main and allied branches of geology and from the civil engineering point of view	understand	**1**
2	Explain the Consequence of disintegration and decomposition of rocks	understand	**1**
3	Explain the role of importance of geology in civil Engineering	understand	**1**
4	Explain details of weathering of rocks	Remember	**1**
5	What are the different factors on which the rate of weathering of rock depends?	understand	**1**

6	Give a brief account of applied importance of geology in the fields of metallurgy, mining, ground water investigation etc., apart from civil Engineering	understand	**1**
7	What are the Various effects of weathering over the properties of rocks	understand	**1**
8	Explain the Weathering of common rocks, Like Granite	understand	**1**
10	Why are there so many failures in construction? What can we do to reduce the frequency and severity of construction failures due to geological drawbacks?	understand	**1**
11	Define and explain the significance of the following a) Mineralogy b) Lithology c) Geophysics	Remember	**2**
12	Define and explain the significance of the following a) Physical Geology b) Petrology c) Structural Geology	Remember	**2**
13	Importance of weathering with Reference to Dams, Reservoirs and tunnels.	understand	**1**
UNIT II			
PART - A (Short Answer Questions)			
1	Mention the composition and properties of Quartz, Feldspars and Mica	Remember	**3**
2	Mention the composition and properties of Calcite	Remember	**3**
3	Mention the composition and properties of Gypsum	Remember	**3**
4	Mention the composition and properties of Clay Minerals	Remember	**3**
5	Mention the composition and properties of Bauxite.	Remember	**3**
6	Define a) Tabular form b) Fibrous form	Remember	**3**
7	Define a mineral	Remember	**3**
8	Define streak	Remember	**2**
9	Define Lustre	Remember	**2**
10	Define cleavage	Remember	**3**
11	Define a) Lamellar Form b) Massive Form	Remember	**3**
12	Define Fracture	Remember	**3**
PART-B (Long Answer questions)			
1	How can you identify a mineral by the help of their physical and chemical properties?	understand	**2**
2	Add notes on the following physical characteristics that are Useful for the identification of rocks and minerals. (i) Color (ii) Streak (iii) Hardness (iv) Form	Remember	**2**
3	Define Mineral. How are the minerals classified?	Remember	**3**
4	Explain the physical properties of the following minerals. (i) Feldspar (ii) Hornblende (iii) Talc (iv) Biotite	Remember	**3**
5	Explain the significance of different physical properties in Mineral identification	understand	**3**
6	On the basis of silicate structure, classify silicate minerals into various groups. Explain the structure of each group in detail	understand	**3**
7	Discuss thoroughly about the structures of Igneous Rocks.	understand	**2**
8	With the help of neat diagrammatic sketches, describe briefly on primary sedimentary structures.	understand	**2**
9	Differentiate between (i) Sandstone and shale (ii) Shale and Limestone	Remember	**2**

	(iii) Conglomerate and Breccia		
10	Describe the different types of rocks. Give the classification, texture and structure of igneous, sedimentary and metamorphic rocks	understand	**2**
11	Differentiate between (i) Quartzite and Marble (ii) Gneiss and Schist (iii) Gneiss and Slate	Remember	**3**
12	Explain the physical properties of Feldspar group of Minerals.	understand	**3**
13	Write different methods of study of Minerals.	Remember	**3**
14	Explain the physical properties of Quartz group of minerals.	understand	**3**
15	Explain the physical properties of Augite, Hornblende.	understand	**3**
16	Give a detailed account on chemical composition , Physical properties, origin occurrence, engineering behavior and uses of clay minerals	understand	**3**
17	Explain the term Lustre and types of Lustre in detail.	understand	**3**
18	Explain the term Fracture and types of Fracture in detail.	understand	**3**
19	Explain the term Form. Give at least five types of Form in detail	understand	**3**
20	Civil engineering importance of rock forming minerals.	understand	**3**
	UNIT III		
PART - A (Short Answer Questions)			
1	Write briefly regarding Unconformities	understand	**4**
2	Define Disconformity	Remember	**4**
3	Define Non conformity	Remember	**4**
4	Define outcrop	Remember	**4**
5	Define Strike	Remember	**4**
6	Define Folds	Remember	**4**
7	Define Anticline and Syncline fold	Remember	**4**
8	Define Angular unconformity	Remember	**4**
9	Define Radial faults	Remember	**4**
10	Define Heave and Throw of fault plane	Remember	**4**
11	Define foot wall and hanging wall.	Remember	**4**
12	Define Dextral Fault and Sinistral fault	Remember	**4**
13	Write the difference between aquifuge and aquiclues	understand	**4**
14	Define Capillary water and Connate water	Remember	**4**
15	Define water logging	Remember	**4**
PART-B (Long Answer questions)			
1	Explain briefly a) Fold b) Fault c) Joint. (Illustrate your answer with neat diagrammatic sketches)	understand	**4**
2	Write about Geological controls on Groundwater Movement.	understand	**4**
3	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.	understand	**4**
4	What is a water table and what are the types of ground water which occurs in the zone of aeration and saturation?	understand	**4**
5	Discuss thoroughly about the Dip strike.	Remember	**4**
6	Discuss the various Groundwater movements	Remember	**4**
7	What is a fault? Discuss the various types of faults and write about the engineering applications.	understand	**4**
8	Write an essay on Classification and Causes of Earthquakes? Describe the Civil Engineering Considerations in Seismic Areas with reference to building Construction.	understand	**4**
9	Write in detail about landslides and their causative effects. Explain about the measures to prevent them.	understand	**4**
10	What is a fold? Discuss the various types of faults and write about the engineering applications.	understand	**4**
11	What is a joint? Discuss the various types of faults.	understand	**4**
12	Discuss thoroughly about the types of unconformity.	Remember	**4**
13	Classify folds and faults and explain how they influence	understand	**4**

	the design of dams.		
14	Classification of Rocks based on porosity and permeability.	understand	**4**
15	Explain water table and types of ground water.	understand	**4**
16	Explain types of Aquifers.	understand	**4**
17	What is Cone of depression? Explain neatly with diagram.	understand	**4**
18	Explain Geological investigation of ground water.	understand	**4**
19	Explain Hydrological investigation of ground water.	understand	**4**
20	Explain Geophysical investigation of ground water.	understand	**4**
UNIT IV			
PART - A (Short Answer Questions)			
1	Write about Seismic methods.	understand	**5**
2	Write about Geothermal methods.	understand	**5**
3	Write about Gravity methods	understand	**5**
4	Brief on the structure of dam with a neat sketch.	understand	**5**
5	Write about Gravity dams.	understand	**5**
6	Write about Buttress dams	understand	**5**
7	Write about Arch dams.	understand	**5**
8	Write about Earth dams.	understand	**5**
9	Write the parts of dam	understand	**5**
10	Define profiling	Remember	**1**
11	Write the difference between rock fill dams and earth fill	understand	**5**
12	Write the difference between rock fill dams and earth fill	understand	**5**
13	Define seismic channel	Remember	**5**
PART-B (Long Answer questions)			
1	What are the Geological Considerations necessary in the selection of a Dam Site?	understand	**5**
2	Discuss the foundation and abutment competency of rocks with reference to dams.	understand	**5**
3	Explain the geological Causes for the Failure of Dams, with a few Case Histories.	understand	**5**
4	Explain the geological factors influencing water tightness and life of reservoirs and write a short note on geological considerations in the leakage of reservoirs.	understand	**5**
5	Discuss the influence of Geological Structures over Dams.	Remember	**5**
6	Explain the considerations of different types of rocks at the dam site construction.	understand	**5**
7	Explain in detail the role of electrical methods of subsurface investigation in civil engineering practice.	understand	**5**
8	Explain the following Geophysical methods. (a) Seismic methods. (b) Geothermal methods.	understand	**5**
9	Describe the principle of gravity method with the help of a neat sketch. What are the different parameters measured?	understand	**5**
10	Write about the various electrical conductivity and resistivity methods.	understand	**5**
11	Describe seismic refraction survey to de conducted for determining the depth of bed rock.	understand	**5**
12	Discuss in detail electrical method of investigation for ground water exploration.	understand	**5**
13	Explain different kinds of gravity methods that are followed during the investigations.	understand	**5**
14	Explain in detail the role of electrical methods of subsurface investigation in civil engineering practice.	understand	**5**
15	Explain in detail about Magnetic method?	Remember	**5**
16	Explain in detail about Seismic method?	Remember	**5**
17	Explain in detail about Radiometric method?	Remember	**5**
18	Explain in detail about Profiling?	Remember	**5**
19	Explain in detail about Sounding?	Remember	**5**
20	What are the instruments used in Seismic Studies. Explain any one in detail.	understand	**5**
UNIT V			
PART - A (Short Answer Questions)			
1	Define tunneling.	Remember	**6**
2	Write a short note on Lining of tunnels.	understand	**6**

3	Write a short note on Over break of tunneling.	understand	**6**
4	Different purposes of tunnels	Remember	**6**
5	Write a short note on Tunnels faulted strata	understand	**6**
6	Write a short note on Tunnels in folded strata	understand	**6**
7	Write a short note on Tunnels in Faulted formations	understand	**6**
8	Write the importance of ground water condition in tunneling process.	understand	**6**
9	What are diversion tunnels?	Remember	**6**
10	Define pressure tunnels.	Remember	**6**
11	What are public utility tunnels?	understand	**6**
12	Define Pressure tunnels?	Remember	**6**
13	What is mine subsidence?	understand	**6**
14	Define underground mining?	Remember	**6**
PART-B (Long Answer questions)			
1	What is a tunnel? Explain the terms that are used in tunnels with neat sketches. Also explain the purpose of tunneling.	understand	**6**
2	a) Mention the deteriorating effects produced in the ground during the excavation of tunnels. b) Mention the variety of purposes served by tunnels.	understand	**6**
3	What is the role of lithology and geological structures in successful tunneling?	understand	**6**
4	Write a short notes on a) effects of tunneling on the ground and b) Over break	understand	**6**
5	What is meant by lining in tunnels? Discuss the lithological and structural reasons that necessitate lining.	understand	**6**
6	What are the various geological factors to be considered for the construction of tunnels? Explain in detail with examples.	understand	**6**
7	Explain how the study of bed rocks is essential before the construction of tunnels	understand	**6**
8	What are the various geological factors to be considered for the construction of tunnels? Explain in detail with examples.	Remember	**6**
9	What are the various geological factors to be considered for the construction of, road cuttings? Explain in detail with examples.	understand	**6**
10	What are the various geological factors to be considered for the construction of buildings? Explain in detail with examples.	understand	**6**
11	Importance of rock type in Geological considerations for successful tunneling?	understand	**6**
12	What are the effects of Joints at the Tunnel side?	understand	**6**
13	What are the effects of Faults at the Tunnel side?	understand	**6**
14	What are the effects of Folds at the Tunnel side?	understand	**6**
15	Role of Lithology in Ground water problems at the tunnel side?	Remember	**6**
16	Role of Geological Structures in ground water at the tunnel side?	Remember	**4**
17	What is the role of Sedimentary rocks at the tunnel site?	Remember	**2**
18	What is the role of Igneous and metamorphic rocks at the Tunnel site?	Remember	**6**
19	What are the effects on Horizontal beds of tilted Strata at the Tunnel site?	understand	**6**
20	What are the effects on Inclined beds of tilted Strata at the Tunnel site?	understand	**6**

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