INSTITUTE OF AERONAUTICAL ENGINEERING
(Autonomous)
Dundigal, Hyderabad - 500 043

CIVIL ENGINEERING

DEFINITIONS AND TERMINOLOGY

Course Name	:	**GEOTECHNICAL ENGINEERING**
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OBJECTIVES

I	To help students to consider in depth the terminology and nomenclature used in the syllabus.
II	To focus on the meaning of new words / terminology/nomenclature

DEFINITIONS AND TERMINOLOGYQUESTION BANK

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
		UNIT - I			
1	What is Soil Mechanics	The branch of science which deals with the properties, nature and performance of soils as a construction and foundation material is called soil mechanics.	Remember	1	ACE006.01
2	What is Mechanical Weathering?	In this process, disintegration of rocks is caused by physical agencies such as plant roots, frost, thermal expansion etc.	Remember	1	ACE006.01
3	What is Chemical Weathering?	In this process, the identity of mineral particles is destroyed and new chemical compounds are formed such as clay particles, silicon, carbonates and iron oxide. Chemical weathering is dependent on available surface for reaction, temperature and presence of chemically active fluid.	Remember	1	ACE006.01
4	What is Residual Soil?	Soils which remain at the place of their formation are called residual soils.	Remember	3	ACE006.03
4	What is Transported Soil?	Transported soils are soils which are carried away from their place of formation to some other place by the transporting agencies. Transporting agencies may be glaciers, water, wind or gravity.	Remember	3	ACE006.03
5	What is Lacustrine soil?	The soil transported by flowing water and deposited in lakes is called lacustrine soil. Most lacustrine soils are primarily silt and clay.	Remember	3	ACE006.03
6	What is Alluvial soil?	The soil transported from its place of disintegration by the flowing water and deposited along the stream is known as alluvial soil.	Remember	3	ACE006.03
7	What is Aeolian soil?	Soils transported and deposited by wind are called Aeolian soils.	Remember	3	ACE006.03
8	Define Water Content.	The water content (w) is defined as the ratio of the mass of water to the mass of soilids.	Understand	2	ACE006.02
9	Define Unit Weight	The unit weight (γ) is defined as total weight (M) per unit volume (V).	Understand	2	ACE006.02
10	Define Specific Gravity	It is defined as ratio of unit weight of soil to that of unit weight of water	Understand	2	ACE006.02
12	What is adsorbed water	The water which is held by electro chemical forces existing on the surface is adsorbed water. This water is under the influence of electrochemical forces.	Remember	3	ACE006.03
13	What is embankment	An embankment is a thick wall of earth that is built to carry a road or railway over an area of low ground, or to prevent water from a river or the sea from flooding the area.	Remember	3	ACE006.03
14	Define Coefficient of Curvature of soil	It is defined as (D30 square) by (D60 into D10). It is denoted by C_c	Understand	2	ACE006.02

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15	Define Coefficient of Curvature of soil	It is defined as ratio of D60 by D10. It is denoted by C_u	Understand	2	ACE006.02
16	What is Consistency Limits	The boundary water contents at which soil changes from one state to another are called consistency limits. This are also known as Atterberg limits	Remember	4	ACE006.04
17	Define Flow Index	It is the slope of flow curve which will be obtained from the liquid limit test of the soil.	Understand	4	ACE006.04
18	What is Plasticity Index	The plasticity index (PI) is a measure of the plasticity of a soil. The plasticity index is the size of the range of water contents where the soil exhibits plastic properties. The PI is the difference between the liquid limit and the plastic limit.	Remember	4	ACE006.04
19	What is Consistency Index?	The consistency index (CI) indicates the consistency (firmness) of a soil. It is calculated as $CI = (LL-W_N)/(LL-PL)$, where W_N is the existing natural water content. Soil at the liquid limit will have a consistency index of 0, while soil at the plastic limit will have a consistency index of 1.	Understand	4	ACE006.04
20	Define Toughness Index	It is ratio of Plasticity Index and Flow Index of a soil sample. This gives us an idea of shear strength of soil at its plastic limit. When toughness index is less than 1, the soil is said to be friable, which means it can be easily crushed at plastic limit.	Understand	4	ACE006.04
21	Define Thixotropy	It is the phenomena of regain of strength lost due to remolding at unaltered moisture content	Remember	4	ACE006.04
22	What is void ratio?	Void ratio is the ratio of volume of voids to that of the volume of solids. It is represented by a symbol (e).	Remember	1	CACE006.01
23	What is porosity?	Porosity is the defined as the volume of voids to that of the total volume of soil sample. It is represented by a symbol (n).	Remember	1	CACE006.01
24	What is degree of Saturation?	Degree of saturation is defined as the total volume of voids contains water to the total volume of voids in percentage.(S_r)	Remember	1	CACE006.01
25	Define Liquid Limit.	The water content at which a soil changes from a plastic consistency to a liquid consistency is defined as Liquid Limit.	Understand	4	CACE006.04
26	Define Plastic Limit.	The minimum water content at which a soil will just begin to crumble when it is rolled into a thread of approximately 3 mm in diameter.	Understand	4	CACE006.04
27	Define Shrinkage Limit.	The minimum water content at which a Soil gets saturated or it is defined as the reduction of water content cannot change the state of volume.	Understand	4	CACE006.04
28	What is percentage air voids?	It is the ratio of volume of air to the total volume.	Remember	2	CACE006.02
29	What is Air content?	Air content is defined as the ratio of the volume of air to the volume of voids.	Remember	2	CACE006.02
30	Define Water Content.	The water content (w) is defined as the ratio of the mass of water to the mass of soilids.	Remember	2	CACE006.02

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31	Define bulk mass density.	The bulk mass density (ρ) is defined as the total mass (M) per unit volume (V).	Remember	1	CACE006.01
32	Define dry mass density.	The dry mass density (ρ_d) is defined as the mass of solids per unit total volume.	Remember	1	CACE006.01
33	Define saturated mass density.	The saturated mass density (ρ_{sat}) is the bulk density of the soil when it is fully saturated.	Remember	1	CACE006.01
34	Define submerged mass density.	When the soil exists below water, it is in a submerged condition. The submerged mass density (ρ') of the soil is defined as the submerged mass per unit total volume.	Remember	2	CACE006.02
35	Define mass density of solids.	The mass density of solids (ρ_s) is equal to the ratio of the mass of solids to the volume of solids.	Remember	2	CACE006.02
36	Define Relative density.	The most important index aggregate property of a Cohesionless soil is its relative density (Dr), is also known as density index (I_D). The relative density is defined as, $$Dr = [(e_{max}-e) / (e_{max}-e_{min})] \times 100$$	Remember	2	CACE006.02
UNIT – II					
1	Define Capillary Water	Capillary water is held in the capillary pores (micro pores). Capillary water is retained on the soil particles by surface forces. It is held so strongly that gravity cannot remove it from the soil particles.	Remember	5	ACE006.05
2	What is Gravitational water	Gravitational water occupies the larger soil pores (macro pores) and moves down readily under the force of gravity. Water in excess of the field capacity is termed gravitational water.	Remember	5	ACE006.05
3	Define Capillary fringe	The height to which capillary water rises in the soil above the water table because of capillary action.	Remember	5	ACE006.05
4	What is Coefficient of permeability?	The coefficient of permeability is defined as the velocity of flow which would occur under unit hydraulic gradient. It has the dimensions of velocity. It is measured in mm/sec. cm/sec, m/sec or m/day.	Understand	7	ACE006.07
5	Define Seepage	Seepage, in soil engineering, movement of water in soils, often a critical problem in building foundations. Seepage depends on several factors, including permeability of the soil and the pressure gradient, essentially the combination of forces acting on water through gravity and other factors.	Remember	6	ACE006.06
6	Define in-situ soil.	"In-situ" is a latin word which means something exist in its natural state or its original position. Like in situ soil means that soil exist its original position i.e. found in natural state.	Understand	6	ACE006.06
7	Define Hydraulic gradient	It is the head loss per unit length in the direction of flow of water. It is denoted by 'i'	Understand	6	ACE006.06

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8	Define Aquifer	A layer of rock, sand, or earth that contains water or allows water to pass through it. .	Understand	8	ACE006.08
9	Define Unconfined Aquifer	An unconfined, also known as water table aquifer, is one in which a water table exists. Recharge of this aquifer takes place through infiltration of precipitation from the ground surface.	Understand	8	ACE006.08
10	What is Confined Aquifer	Confined aquifers are permeable rock units that are usually deeper under the ground than unconfined aquifers. ... Groundwater in a confined aquifer is under pressure and will rise up inside a borehole drilled into the aquifer.	Understand	8	ACE006.08
11	Define Flow line	A line along which a water particle moves through a permeable soil medium.	Understand	13	ACE006.13
12	Define Equipotential Line	equipotential lines are the lines joining the points with same total potential or elevation head	Understand	13	ACE006.13
13	What is Flow Channel	The space between two adjacent flow lines is known as a flow channel	Understand	13	ACE006.13
14	What is Cone of depression	The area around the well in which water table lowers when we pump out the water from the well.	Understand	13	ACE006.13
15	Define Degree of saturation	The degree of saturation is the ratio of the volume of water to the volume of voids. It is denoted by 'S'. The degree of saturation generally expressed as a percentage. It is equal to zero when the soil is absolutely dry and 100% when the soil is fully saturated.	Remember	9	ACE006.09
16	Define Permeability.	Permeability is defined as the property of a porous material which permits the passage or seepage of water through its interconnecting voids. (Or) The property of soil which permits flow of water through it is called the permeability.	Remember	5	CACE006.05
17	Define Relative Permeability.	Relative permeability is the ratio of effective permeability of a particular fluid to its absolute permeability.	Remember	5	CACE006.05
18	Define Darcy's Law.	The flow of free water through soil is governed by Darcy's law.	Remember	6	CACE006.06
19	What is Coefficient of permeability?	The coefficient of permeability is defined as the velocity of flow which would occur under unit hydraulic gradient. It has the dimensions of velocity. It is measured in mm/sec. cm/sec, m/sec or m/day.	Understand	5	CACE006.05
20	Define Seepage Pressure.	As the water flows through the soil, it exerts a force on the soil. The force acts in the direction of flow in the case of isotropic soils. The force is known as the drag force or seepage force. The pressure induced in the soil is termed as seepage pressure.	Remember	5	CACE006.05
21	Define stratified soil.	The sub soil in the field consists of number of strata it is defined as stratified soil.	Remember	10	CACE006.10
22	What is Vertical Flow?	The flow is taking place in one layer after another and continuity of flow requires the velocity of flow in each of the layers to be the same.	Understand	11	CACE006.11

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23	What is Horizontal Flow?	When flow is horizontal, it is taking place through all the layers at the same time and therefore, the hydraulic gradient is the same.	Understand	11	CACE006.11
24	Define Flow net	The two sets of curves, namely the flow lines and the equipotential lines, from a flow net.	Understand	5	CACE006.05
25	Define Capillary action	A phenomenon associated with surface tension and resulting in the elevation or depression of liquids in capillaries.	Understand	5	CACE006.05
26	Define Effective Stress	Effective stress is a force that keeps a collection of particles rigid. Usually this applies to sand, soil, or gravel.	Understand	11	CACE006.11
27	What is Neutral Stress	The stress transmitted by the fluid that fills the voids between particles of a soil or rock mass.	Understand	11	CACE006.11
28	What is Pore Water Pressure	Pore water pressure refers to the pressure of groundwater held within a soil or rock, in gaps between particles (pores).	Understand	11	CACE006.11
29	Define Liquefaction	The condition of zero effective stress associated with upward seepage is also called liquefaction, quicksand, or a boiling condition.	Understand	5	CACE006.05
30	Define Absolute Permeability	Absolute Permeability is the ability of a reservoir rock to allow fluids to flow through its pores. It indicates the flow capacity of formation. It is simply referred to as permeability.	Understand	5	CACE006.05
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UNIT – III

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
1	What is isobar	It is the line joining points of equal vertical stresses below the ground surface.	Understand	10	ACE006.10
1	What is isotropic	Isotropic means that the properties of materials are the same in all directions.	Understand	10	ACE006.10
3	What is anisotropic	Anisotropy is the property of being directionally dependent. Anisotropic soil does not have the same physical properties when the direction of measurement is changed.	Understand	10	ACE006.10
4	Define Vertical Stress	Vertical stress is the pressure or stress imposed on a layer of soil or rock by the weight of overlying material and due to external load if any.	Remember	11	ACE006.11
5	What is zero air voids line	The line indicates that the air is not present in the pores of the soil mass which means the soil is fully saturated. It is obtained from the compaction test.	Understand	16	ACE006.16
6	What is Compactive Effort	Compactive effort is the total energy, expressed as kilo-Newton meters per cubic meter used to compact the soil specimen.	Understand	17	ACE006.17
7	What is MDD	MDD refers to Maximum Dry Density. It is the maximum density that the soil can be achieved by removal of the air voids in the soil. MDD varies with the type of Compactive effort applied to the soil	Understand	17	ACE006.17
8	Define OMC	The Optimum Water Content of soil is the water content at which a maximum dry unit weight can be achieved for a given compaction effort.	Understand	17	ACE006.17

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9	What is Line of Optimums	The line of optimums is defined as a line or curve connecting MDD/OMC points from proctor curves created at different Compactive energies for a given soil.	Understand	17	ACE006.17
10	What is flocculated Structure	Flocculated structure is present in clay particles which contains larger surface area. These are charged particles which have positive charge on the edges and negative charge on the face of the particle. Edge to face orientation of particles occurs in this structure.	Remember	16	ACE006.16
12	What is dispersed Structure	Dispersed structure also occurs in clay particles when the clay is remolded. In this structure face to face orientation of particles occurs in this structure.	Remember	16	ACE006.16
13	What is Cohesion less soil	Cohesion-less soil is soil that contains elements that do not stick together. Cohesion-less soil is any free-running type of soil, such as sand or gravel, whose strength depends on friction between particles Also may be referred to as frictional soil	Understand	15	ACE006.15
14	Define Cohesive soils	Cohesive soils stick together. Cohesive soil means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical side slopes, and is plastic when moist.	Remember	15	ACE006.15
15	What is end product Specification in Compaction	In end-product specifications, the required field dry density is specified as a percentage of the laboratory maximum dry density, usually 90% to 95%.	Remember	17	ACE006.17
16	What is Method Specification in Compaction	In method specification the procedure for doing compaction in field such as type & weight of compaction equipment, maximum thickness soil layer and number of passes for each layer.	Remember	17	ACE006.17
17	Define Point load	In the field of engineering, a point load is a load applied to a single, specific point on a structural member.	Remember	14	CACE006.14
18	Define Uniformly disturbed load	A uniformly distributed load (UDL) is a load that is distributed or spread across the whole region of an element such as a beam or slab.	Remember	14	CACE006.14
19	Define Pressure bulb	An isobar or pressure bulb is a stress contour or a line which connects all points below the ground surface at which the vertical pressure is the same.	Remember	15	CACE006.15
20	Define Compaction	It is defined as the expulsion of air from the voids space due to application of loading.	Remember	15	CACE006.15
21	What is Soil Structure	Soil structure describes the arrangement of the solid parts of the soil and of the pore space located between them.	Understand	15	CACE006.15
22	Define Swelling	The increase in volume of certain substances, when they are often accompanied by release of water.	Understand	15	CACE006.15
23	Define Shrinkage	The decrease in volume of certain substances, when they are often accompanied by release of water.	Understand	15	CACE006.15
24	Define Compressibility	Compressibility (also known as the coefficient of compressibility or isothermal compressibility) is a measure of the relative volume change of a fluid or solid as a response to a pressure (or mean stress) change.	Understand	16	CACE006.16

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25	Define Consolidation	Consolidation refers to the process by which soil changes volume gradually in response to a change in pressure.	Understand	16	CACE006.16
26	Define Water Content.	The water content (w) is defined as the ratio of the mass of water to the mass of soilids.	Remember	2	CACE006.02
27	Define dry mass density.	The dry mass density (ρ_d) is defined as the mass of solids per unit total volume.	Remember	1	CACE006.01
28	Define Preconsolidation pressure	Preconsolidation pressure is the maximum effective vertical overburden stress that a particular soil sample has sustained in the past.	Understand	1	CACE006.01
29	Define bulk mass density.	The bulk mass density (ρ) is defined as the total mass (M) per unit volume (V).	Remember	2	CACE006.02
30	Define Relative density.	The most important index aggregate property of a Cohesionless soil is its relative density (Dr), is also known as density index (I_D). The relative density is defined as, $Dr = [(e_{max}-e) / (e_{max}-e_{min})] \times 100$	Remember	2	CACE006.02
31	What is Compressibility	Compressibility (also known as the coefficient of compressibility or isothermal compressibility) is a measure of the relative volume change of a fluid or solid as a response to a pressure (or mean stress) change.	Understand	15	CACE006.15
UNIT - IV					
1	What is compression	Soil compressibility is the capability of a soil to decrease in volume when subjected to a mechanical load. The process that describes the decrease in soil volume (soil densification) under an externally applied load is called compression	Remember	18	ACE006.18
2	What is under consolidated soil	If the initial vertical effective stress is greater than the pre consolidated stress then the soil will be under consolidated soil. It means that the soil is still in the process of consolidating under a previously applied load.	Understand	18	ACE006.18
3	What is normally consolidated soil	A soil that is currently experiencing its highest stress is said to be "normally consolidated	Understand	18	ACE006.18
4	What is over consolidated soil	A soil is said to be over consolidated if it has been subjected in the past to the pressure in excess of present pressure	Understand	18	ACE006.18
5	What is recompression index	The recompression index C_r is determined from the graph representing the variation of void ratio e as a function of the effective stress σ' plotted in the logarithmic scale for reloading sequence	Understand	18	ACE006.18
6	What is compression index	The Compression Index (Cc) is equal to the slope of the graph of pressure versus void ratio (log scale) for loading sequence in normally consolidated soil.	Understand	19	ACE006.19

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		$$Cc = \frac{\Delta e}{\log(\frac{\sigma+\Delta\sigma}{\sigma})}$$			
7	What is expansion index	This index is the slope of the graph of pressure versus void ratio (log scale) for unloading sequence. It is also known as swell index	Understand	19	ACE006.19
8	What is Coefficient of Compressibility	It is the ratio of decrease in void ratio per unit increase in effective stress. It is represented by symbol a_v. The value of a_v is different at different effective stress.	Understand	19	ACE006.19
9	What is Coefficient of volume change	It is defined as volumetric strain per unit increase in effective stress. It is denoted by symbol m_v	Understand	19	ACE006.19
10	What is overburden	Loose soil that overlies bedrock; also refers to all material overlying point of interest in a given soil deposit, such as the soil that must be moved to get to a level where construction of foundation components may begin.	Remember	12	ACE006.12
11	What is Preloading	The densification of a soil by placement of a temporary surface load.	Remember	12	ACE006.12
12	What is consolidation	Consolidation is any process which involves a decrease in water content of saturated soil without replacement of water by air." In general it is the process in which reduction in volume takes place by expulsion of water under long term static loads.	Understand	18	ACE006.18
13	What is Immediate Settlement	The decrease in the volume of the soil immediately after the load is imposed on it is immediate settlement. The decrease in volume is due to expulsion of air in voids & due to compression of solid particles	Understand	18	ACE006.18
14	What is Consolidation Settlement	The reduction in the volume of soil due to expulsion of water from voids. Consolidation settlement depends on pore pressure and permeability of soil	Remember	18	ACE006.18
15	What is Degree of Consolidation	The ratio, expressed as a percentage, of the amount of consolidation at a given time within a soil mass, to the total amount of consolidation obtainable under a given stress condition.	Understand	18	ACE006.18
16	Define Settlement	When a load is applied on the ground, it increases the vertical effective stress. This stress increases the vertical strain in the soil. This increase in vertical strain causes the ground to move downward. This downward movement of the ground is called settlement.	Remember	18	CACE006.18
17	What is isothermal Compressibility	isothermal compressibility is a measure of the relative volume change of a fluid or solid as a response to a pressure (or mean stress) change.	Remember	18	CACE006.18
18	Define coefficient of consolidation	The coefficient of consolidation is the parameter used to describe the rate at which saturated clay or other soil undergoes consolidation, or compaction, when subjected to an increase in pressure.	Remember	18	CACE006.18

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19	Define Immediate settlement	Immediate settlement takes place in a short time after application of load and is due to elastic distortion of the soil.	Remember	18	CACE006.18
20	Define pre-consolidated soil	The consolidation will be greater than that for a pre-consolidated soil. That is because the pre-consolidated soil has previously experienced greater or equal pressure and has undergone at least some consolidation under that pressure.	Remember	18	CACE006.18
21	Define Preconsolidation pressure	Preconsolidation pressure is the maximum effective vertical overburden stress that a particular soil sample has sustained in the past.	Understand	18	CACE006.18
22	Define Structure soil	Structure Soil describes the arrangement of the solid parts of the soil and of the pore space located between them.	Remember	5	CACE006.05
23	Define Secondary Consolidation	The reduction in volume continues at a very slow rate even after the excess hydrostatic pressure developed by the applied pressure is fully dissipated and the primary consolidation is complete.	Remember	18	CACE006.18
24	Define Initial Consolidation	When a load is applied to a partially saturated soil, a decrease in volume occurs due to expulsion and compression of air in the voids.	Understand	18	CACE006.18
25	Define Time rate settlement	When a soil is subjected to an increase in effective stress, the pore water is squeezed out in a manner similar to water being squeezed from a sponge, and the basic concepts presented above govern the time rate of settlement of the surface of a clay layer.	Remember	18	CACE006.18
26	Define Coefficient of Consolidation	The coefficient of consolidation is the parameter used to describe the rate at which saturated clay or other soil undergoes consolidation, or compaction, when subjected to an increase in pressure.	Remember	18	CACE006.18
27	Define Over consolidation ratio	The over consolidation ratio (OCR) is the relation between the Preconsolidation pressure and the current effective stress of the soil. If OCR=1 the soil is normally consolidated (NC), if OCR>1 the soil is over consolidated (OC).	Understand	18	CACE006.18
28	Define Normal consolidation	The consolidation will be greater than that for a pre-consolidated soil. That is because the pre-consolidated soil has previously experienced greater or equal pressure and has undergone at least some consolidation under that pressure.	Understand	18	CACE006.18
29	Define Consolidation	It is defined as the expulsion of water from the pore spaces due application of loading.	Remember	18	CACE006.18
30	What is Pore Water Pressure	Pore water pressure refers to the pressure of groundwater held within a soil or rock, in gaps between particles (pores).	Understand	18	CACE006.18
UNIT - V					
1	What is Angle of Internal Friction	The angle between the axis of normal stress and the tangent to the Mohr at a point corresponding to a given failure stress in soil.	Understand	20	ACE006.20
2	What is Compressive Strength	The load per unit area at which an unconfined cylindrical soil specimen will fail in a simple compression test.	Remember	21	ACE006.21

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3	What is Apparent Cohesion	Cohesion in fine granular soils caused by capillary forces.	Understand	20	ACE006.20
4	What is principal plane	The plane along which shear stresses are zero is known as principal plane	Understand	20	ACE006.20
5	What is Undisturbed Sample	A soil sample that has been obtained by methods in which precaution has been taken to minimize disturbance.	Remember	20	ACE006.20
6	What is Angle of repose	The maximum slope at which a material dropped down by natural process remains stable is called angle of repose.	Understand	20	ACE006.20
7	What is Critical Void Ratio	The void ratio of a soil at which its volume remains constant is critical void ratio	Understand	22	ACE006.22
8	What is Mohr Failure Envelope	The envelope of a sequence of Mohr circles representing different stress conditions at failure for a given material.	Understand	20	ACE006.20
9	What is Tri-axial Compression	The compression test in which soil, encased in a rubber membrane under applied normal load and lateral confining pressure is stressed to failure, either with or without permitting drainage.	Understand	21	ACE006.21
10	What is drained Shear Strength	The drained shear strength is the shear strength of the soil when pore fluid pressures, generated during the course of shearing the soil, are able to dissipate during shearing. It also applies where no pore water exists in the soil (the soil is dry) and hence pore fluid pressures are negligible.	Understand	21	ACE006.21
11	What is Un drained Shear Strength	Un-drained shear strength is the shear strength of the soil when pore fluid pressures, generated during the course of shearing the soil, are unable to drain out of soil during shearing.	Understand	21	ACE006.21
12	What is Over Consolidated Clay	Clay that has been more compacted than would be expected from the existing overburden, e.g. it has been subjected to pressure from overburden that has subsequently been removed by erosion.	Understand	22	ACE006.22
13	What is relative density	Relative density is the ratio of the difference between the void ratios of a cohesion-less soil in its loosest state and existing natural state to the difference between its void ratio in the loosest and densest states.	Remember	22	ACE006.22
14	What is Shear Strength of soil	The shear strength of a soil is a capacity of the soil to resist shearing stress. Shear Strength, $S = C + \sigma * \tan(\Phi)$ Where C = Cohesion σ = effective stress Φ = angle of internal friction	Understand	22	ACE006.22
15	What is Punching Shear	In punching shear failure foundation punches into the soil. This type of failure is seen in loose and soft soil	Understand	22	ACE006.22

S No	QUESTION	ANSWER	Blooms Level	CLO	CLO Code
16	What is Pore pressure parameter	The change in the pore pressure due to change in the applied stress, during an un-drained, any be explained in terms of empirical coefficients called pore pressure parameters.	Understand	20	CACE006.20
17	Define Drained of Soil	Cause the water or other liquid in (something) to run out, leaving it empty or dry.	Understand	20	CACE006.20
18	Define angle of shear?	The angle between the planes of maximum shear, which is bisected by the axis of greatest compression.	Remember	20	CACE006.20
19	Define punching shear failure?	Punching shear is a type of failure of reinforced concrete slabs subjected to high localized forces.	Remember	20	CACE006.20
20	What is Mohr's Circle	Mohr, a German scientist derived a graphical method for the determination of stresses on a plane inclined to the major principal planes.	Understand	20	CACE006.20
21	Define Shear Strength	It is defined as the resistance offered by the soil against shearing during the application of loading.	Understand	20	CACE006.20
22	Define Dilatancy	The increase in volume of a granular substance when its shape is changed, because of greater distance between its component particles.	Understand	20	CACE006.20
23	What is Critical void ratio	In a soil mass, the ratio of the volume of the void space to the volume of the solid particles is defined as the critical void ratio.	Remember	2	CACE006.02
24	Define Confined pressure	An equal, all-sided pressure, such as lithostatic pressure produced by overlying rocks in the crust of the earth.	Understand	2	CACE006.02
25	Define Cohesion	The molecular force between particles within a body or substance that acts to unite them.	Remember	2	CACE006.02
26	Define Adhesion	The molecular force of attraction in the area of contact between unlike bodies that acts to hold them together.	Remember	2	CACE006.02
27	Define Internal friction angle.	A measure of the ability of a unit of rock or soil to withstand a shear stress. It is the angle measured between the normal force and resultant force that is attained when failure just occurs in response to a shearing stress.	Remember	20	CACE006.20
28	What is Confined?	If something is confined to a particular place, it exists only in that place. If it is confined to a particular group, only members of that group have it.	Understand	20	CACE006.20
29	What is Unconfined?	Able to move about at will without bounds or restraint.	Understand	20	CACE006.20
30	Define Pore water pressure.	Pore water pressure refers to the pressure of groundwater held within a soil or rock, in gaps between particles (pores).	Remember	20	CACE006.20