

"Mohrs Stress Circle".

1. The shearing resistance of a soil is constituted by _____

a) Structural resistance and Frictional resistance

b) Shearing strength

c) None of the mentioned

d) All of the mentioned

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2. The shear strength in cohesion less soil is due to _____

a) Internal friction

b) Cohesion

c) Inter granular friction

d) Inter particle force

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3. The planes that exist in soil mass is _____

a) Principal plane

b) Principal stress

c) Stress plane

d) None of the mentioned

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4. The failure condition for a soil can be expressed in terms of limiting shear stress, called _____

a) Principal stresses and Shear strength

b) Shearing resistances

c) None of the mentioned

d) All of the mentioned

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5. The shear deformation of soil in a building can cause _____ of the following?

a) Sinking of footing

b) Slide in an earth embankment

c) Movement of wedge

d) All of the mentioned

6. Major principal stress in a soil is represented by the symbol _____

a) σ_1

b) σ_2

c) σ_3

d) σ_4

7. The circle obtained from two dimensional stress system is known as _____

- a) Principal stress circle
- b) Mohr circle
- c) Shearing stress circle
- d) None of the mentioned

8. The maximum shear stress τ_{max} , for a soil mass is equal to _____

- a) $(\sigma_1 - \sigma_3)/2$
- b) $(\sigma_1 + \sigma_3)/2$
- c) $(\sigma_1 \times \sigma_3)/2$
- d) $(\sigma_3 - \sigma_1)/2$

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9. The normal stresses acting on planes of the soil are known as _____

- a) Major principal stresses
- b) Principal stresses
- c) Minor principal stresses
- d) Principal planes

10. Stress component on planes of a loaded soil mass depends upon _____

- a) Stress acting on plane
- b) Direction of plane
- c) Shearing resistance
- d) All of the mentioned

Mohr – Coulomb Failure Theory”.

1. The curve obtained by plotting the normal and shear stress is called as _____

- a) Mohr's envelope
- b) Coulomb envelope
- c) Strength envelope
- d) Stress envelope

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2. Which of the following is coulomb's strength equation?

- a) $S = c + \tan \phi$
- b) $C = s + c \tan \phi$
- c) $S = c + \sigma \tan \phi$
- d) $S = \tan \phi$

View Answer

3. The critical shear stress causing failure of material depends upon _____

- a) Properties of the material and normal stress on the plane
- b) Intermediate principal stress

- c) None of the mentioned
- d) All of the mentioned

4. Theory of failure, was first proposed by _____

- a) Coulomb
- b) Mohr
- c) Casagrande
- d) Darcy

5. The Mohr-Coulomb theory can be expressed algebraically by, which of the following equation.

- a) $S = c + \sigma \tan \phi$
- b) $\tau_f = s = F(\sigma)$
- c) $s = F(\sigma)$
- d) $\tau_f = F(\sigma)$

6. According to Coulomb, the relationship between shear strength and normal stress could be represented by _____

- a) Linear curve
- b) Parabolic curve
- c) Straight line
- d) None of the mentioned

7. Mohr envelope can be considered to be straight if the angle of internal friction ϕ is assumed to be _____

- a) 90°
- b) $>90^\circ$
- c) $<90^\circ$
- d) None of the mentioned

8. Which of the following stresses does not have any influence on strength of a material?

- a) Major principal stress
- b) Minor principal stress
- c) Intermediate principal stress
- d) Shearing stress

9. The parameter ϕ in coulomb's equation " $S = c + \sigma \tan \phi$ ", represents _____

- a) Shearing resistance and Angle of internal friction
- b) Angle of slope
- c) None of the mentioned
- d) All of the mentioned

Direct Shear Test”.

1. Shearing resistance can be determined in the laboratory by _____ methods.

- a) 2
- b) 6
- c) 4
- d) 8

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2. Which of the following shear test is developed based on drainage conditions?

- a) Quick test and Consolidated un drained test
- b) Direct shear test
- c) None of the mentioned
- d) All of the mentioned

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3. The direct shear test can also be called as _____

- a) Simple shear test
- b) Stress test
- c) Strain controlled shear box test
- d) All of the mentioned

4. The commonly used apparatus used for performing shear box test is _____

- a) Shear-box apparatus
- b) Bishop's pore pressure apparatus
- c) Tri axial shear test apparatus
- d) None of the mentioned

View Answer

5. To conduct un-drained test, which of the following is used?

- a) Slope grids
- b) Perforated grids
- c) Plain grids
- d) All of the mentioned

6. The drained test is also known as _____

- a) Direct shear test
- b) Slow test
- c) Vane shear test
- d) Quick test

7. Which of the following is a disadvantage of the shear box test?

- a) Stress condition of soil is complex

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- b) The test cannot be used for coarse grained soil
 - c) No control on the drainage of soil
 - d) The shear box test is more complex test
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8. The shearing of cohesive soil in drained test requires _____ days.

- a) 2
- b) 1 to 2
- c) 2 to 5
- d) 1

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9. A major difference between the direct shear test and tri axial shear test is _____

- a) Control on the drainage level
 - b) Stress condition
 - c) None of the mentioned
 - d) All of the mentioned
- r

10. In direct shear test, the soil load is subjected to more stress at _____

- a) Centre
- b) Edges
- c) Top and bottom
- d) All of the mentioned

Tri axial Compression Test".

1. The Tri axial compression test was introduced by _____

- a) A. casagrande and Karl Terzaghi
- b) Mohr
- c) None of the mentioned
- d) All of the mentioned

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2. Which of the following strength test is commonly used in the laboratory?

- a) Direct shear test
- b) Confined compression test
- c) Tri axial shear test
- d) Unconfined shear test

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3. Which of the following outlet is provided at the base of the tri axial test apparatus?

- a) Cell fluid inlet
- b) Pore water outlet
- c) Drainage outlet
- d) All of the mentioned

4. Pore pressure developed in the tri axial test can be measured by _____

- a) Bishop's apparatus
- b) Pore pressure apparatus
- c) Terzaghi's apparatus
- d) Mohr's apparatus

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5. Bishop's apparatus does not contain which one of the following equipment?

- a) Porous disc
- b) Top cap
- c) Rollers
- d) All of the mentioned

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6. The vertical stress on the solid cylindrical test apparatus is applied by _____

- a) Major principal stress
- b) Minor principal stress
- c) Intermediate principal stress
- d) All of the mentioned

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7. The deviator stress developed in the proving ring, through the applied pressure is equal to are _____

- a) $\sigma_1 + \sigma_3$
- b) $\sigma_1 - \sigma_3$
- c) $\sigma_2 - \sigma_3$
- d) $\sigma_2 + \sigma_1$

8. When the soil is in the state of stress, it is said to be in _____

- a) Constant state
- b) Plastic equilibrium
- c) Stress conditioned state
- d) Equilibrium condition

9. The deviator stress σ_d is given by _____

- a) $\sigma_d = \sigma_1 + \sigma$
- b) $\sigma_d = \sigma_3 - \sigma_1$
- c) $\sigma_d = \text{additional axial load}/A_2$
- d) $\sigma_d = \sigma_1 - \sigma_3$

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10. Which of the following is an advantage of using tri axial test?

- a) Accurate result is not possible
- b) The plane of shear failure is predetermined

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c) Stress conditions are complex

d) Precise measurement

“Unconfined Compression Test”.

1. In unconfined compression test the value of σ_2 and σ_3 is equal to _____

a) 1

b) 0

c) 0.5

d) $\frac{1}{2}$

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2. The unconfined compression test is derived from _____

a) Direct shear test

b) Vane shear test

c) Tri axial compression tests

d) Drained test

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3. The unconfined compression test is generally applicable to _____

a) Unsaturated clay

b) Saturated clay

c) Fine grained soil

d) Coarse grained soil

4. The unconfined compression test was first designed by _____

a) A. casagrande and Goyal

b) Singh

c) None of the mentioned

d) All of the mentioned

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5. In plastic failure, load corresponding to _____ strain is arbitrarily taken as the failure load.

a) 10 %

b) 5 %

c) 20 %

d) 50 %

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6. When the Mohr circle is drawn in confined compression test, its radius will be equal to _____

a) C_u

b) q_u

c) R_u

d) None of the mentioned

View Answer

7. Stress condition in the Unconfined compression test represents _____

a) Drained test

b) Un-drained test

c) Quick test

d) All of the mentioned

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8. Which of the following parameter is used to represent unconfined compressive strength at failure?

a) τ_f

b) c_u

c) q_u

d) A_u

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“Shear Strength of Cohesive Soil”.

1. The un-drained test is carried out on sample of clay, silt, and peat to determine _____

a) Shear Strength of natural ground and Sensitivity

b) Pore pressure

c) None of the mentioned

d) All of the mentioned

2. In an un-drained test on saturated clays, both σ_1' and σ_3' is independent of _____

a) Pore pressure

b) Shear strength

c) Cell pressure

d) Effective pressure

3. The consolidated-un drained test can be performed in _____ methods.

a) 3

b) 2

c) 4

d) 1

4. Which of the following cannot be obtained by using un-drained test

a) Effective stress failure envelope

b) Shear strength

c) sensitivity

d) All of the mentioned

5. The change in the pore pressure during an un-drained shear can be explained by _____

- a) Lateral pressure
- b) Effective stress
- c) Pore pressure parameter
- d) Mohr's circle

6. Factor affecting pore pressure parameters is _____

- a) Type of shear
- b) Temperature
- c) Nature of the fluid
- d) All of the mentioned

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7. The value of pore pressure parameter, at failure for saturated clay is _____

- a) 1.2 to 2.5
- b) 2 to 3
- c) 0.3 to 0.7
- d) 0.7 to 1.3

8. Negative pore pressure in clay or sand is developed due to _____

- a) Expansion on loading
- b) Over loading
- c) Loose structure
- d) Compaction

9. If the pore pressure is measured during un-drained stage of the test, the result can be expressed in terms of _____

- a) C' and ϕ
- b) c_u
- c) None of the mentioned
- d) All of the mentioned

10. The equation for the unconsolidated un drainage strength of clay is _____

- a) $\tau = c + \sigma \tan \phi$
- b) $\tau_f = c_{cu} + \sigma \tan \phi_{cu}$
- c) $\tau = c + \sigma$
- d) $\tau = \sigma \tan \phi$

11. What will be the shearing resistance of a sample of clay in an unconfined compression test, falls under a load of 150 N? Take change of cross-section $A_f=2181.7 \text{ mm}^2$.

- a) 68.75 kN/m^2
- b) 34.38 kN/m^2
- c) 11.35 kN/m^2
- d) 0.6875 kN/m^2

محمد عيسى