

Roll No.

Total No. of Pages : 02

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M.Tech.(Soil Mechanics and Foundation Engineering) (Sem.-2)

SHEAR STRENGTH OF SOILS

Subject Code : CESE-6

M.Code : 71579

Date of Examination : 13-07-22

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

1. a) Distinguish between Residual soils and Transported soils.
b) What are the various factors that influence shear resistance of soils?
2. a) What does Mohr circle of stress represent?
b) For a normally consolidated insensitive clay $\phi_{CO} = 30^\circ$. Deviator stress at failure of same soil is 2.5 kg/cm^2 in UU Test. If skempton's 'A' Parameter at failure is 0.62, find ϕ_{Cu} for this soil.
3. a) Differentiate between :
i) Pressure head and piezometric head
ii) Positive pore water pressure and negative water pressure.
b) A settlement analysis carried out for a proposed structure indicates that 8cm of settlement will occur in 5 years and the final settlement will be about 40 cm. The computations were made on the basis of double drainage condition. However subsequent borings established only single drainage condition. Make an estimate of the final settlement and settlement in 5 years for the changed situation.
4. a) Show effective stress paths for varying degree of drainage during triaxial shear test.
b) Constant volume critical void ratio is considered to be more rational in liquefaction case. Give your comments.
5. a) Draw a graph to show the relationship of drained and undrained stress-strain curves.
b) Give a few causes of preconsolidation in soils.

6.
 - a) Write essential features of a critical state model. Explain any model based on theory of electroplasticity for clays.
 - b) Explain how volume changes occur in soil masses.
7.
 - a) Write a short note on Intergranular pressure, Intrinsic pressure and cohesion.
 - b) Explain “*The specimen with greater density has greater strength.*”
8.
 - a) Distinguish between :
 - i) Ambient stress and deviator stress.
 - ii) p-q diagram and Mohar diagram.
 - b) Explain engineering geology of soils of our country.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.