CE 443 **QUIZ – 1** **Fall 2005**

Name _____

Open book/notes

1. A To get any credit false statement must be corrected. Boldfaced part may not be changed.

Total unit weight of a soil below water table is its saturated unit weight plus weight of water.

Angle of friction and cohesion for Mohr failure criterion are determined using direct shear test.

Split spoon sampler yields undisturbed soil samples.

The best way to differentiate between silt and clay is through grain size analysis.

Vane shear test is best suited for fine sand and fine gravel.

2. A 10m thick clay layer with single drainage settled 8 cm in 3.2 years. The coefficient of consolidation C_v for this clay was 5×10^{-3} cm^2/s.

a) What percent of total settlement does this represent?

b) How long would it take to complete 90% of total settlement?

3. Consolidated undrained triaxial compression tests were performed on a normally consolidated clay.

a) Determine soil shear strength parameters based on total stress (c, ϕ) and effective stress (c'. ϕ').

b) For test No. 3, determine σ_3 and u, if at failure σ_1 = 200 /kPa.

Test No.	**σ_1 kPa**	**σ_3 kPa**	**u kPa**
1	133	67	20
2	226	113	33
3	200	?	?

Problem 4

Values of field penetration tests using standard sampler are given. A United States safety hammer was used. The diameter of the hole was 6". Ground water table was at 3m depth. Determine $(N_1)_{60}$ values using Peck et al.'s correction (1976)

Depth m	**Nfield**	**γ kN/m^3**
0	-	19
1.5	11	19
3	14	19
4.5	18	19
6	21	19