Higher Technological Institute
Civil Engineering Department
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(CT 231) Highway & Airport Engineering
Spring (2019)
Assignment No. (1)
Soil Classification & Soil Properties

Question 1

a. What is the main purpose of soil classification?

b. Classify the following soil samples according to (AASHTO) classification systems.

Sieve size	Percent of passing (by weight)							
	Soil (A)	Soil (B)	Soil (C)	Soil (D)	Soil (E)	Soil (F)	Soil (G)	Soil (H)
# 10	93	93	30	98	55	82	75	98
# 40	85	88	15	81	40	70	55	89
# 200	62	70	3	38	25	30	27	65
L.L	40	48	N.P	42	4	33	30	44
P.L	30	26	N.P	23	N.P	12	10	23

Question (2)

a. The following table shows results obtained from a standard Proctor test on 6 samples of a soil to be used as fill for highway. Determine the maximum dry density and the optimum moisture content of the soil.

Sample no.	Bulk Density (lb/ft3)	Moisture Content (%)
1	122.7	4.1
2	130.5	5.9
3	140.0	7.4
4	142.6	10.4
5	136.2	11.8
6	134.1	14.1

b. Explain how can you calculate relative compaction?

Question (3)

a. Compare between CBR test, Plate loading test, and Triaxial test.

b. A C.B.R test was applied on a subgrade soil & the following results were obtained:

Penetration (inch)	0.05	0.1	0.15	0.2	0.25	0.3	0.35
Load before soaking (1b)	55	325	520	610	705	735	770
Load after soaking (1b)	120	265	400	505	580	625	655

Determine the design C.B.R value for this soil.