Department of Civil Engineering, KEC, Katihar

Course Instructor: Dr. RASHID MUSTAFA

Class Test (Geotechnical Engineering-II)   [Set-A] [Time: 0.25 Hours]

Q.1 Compute the lateral thrust per meter length against 5 m high retaining wall if it is pushed towards a clayey soil (c = 25 kN/m^2, and φ= 30^0) with horizontal top. The backfill carries a surcharge of intensity 40 kN/m^2 and unit weight of 18 kN/m^3. Find also the point of application.   **[5 Marks]**

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Class Test (Geotechnical Engineering-II)   [Set-B] [Time: 0.25 Hours]

Q.1 Two identical specimen of a soil were tested in triaxial apparatus. First specimen failed at a deviator stress 770 kN/m^2 when cell pressure was 200 kN/m^2, while the second specimen failed at a deviator stress of 1370 kN/m^2 under a cell pressure of 400 kN/m^2. Compute the shear strength parameters and failure angle with the vertical axis.   **[5 Marks]**

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Class Test (Geotechnical Engineering-II)   [Set-C] [Time: 0.25 Hours]

Q.1 A soft clay (OCR = 1) layer is 20 m thick with a moisture content of 45%. The clay has a saturated unit weight of 20 kN/m^3, a particle specific gravity of 2.7 and a liquid limit of 60%. A foundation load will subject the centre of layer to a vertical stress increase of 10 kPa. Ground water level is at the surface of the clay. Calculate the consolidation settlement of the foundation if Υ_w = 10 kN/m^3.   **[5 Marks]**

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Class Test (Geotechnical Engineering-II)   [Set-D] [Time: 0.25 Hours]

Q-1 Laboratory results on a soil have shown that its unconfined compressive strength is 1.2 kg/cm^2. In a traixial test, a specimen of soil when subjected to a cell pressure/chamber pressure of 0.4 kg/cm^2 failed at an additional stress of 1.6 kg/cm^2. Estimate the shear strength of the same soil along a horizontal plane at a depth of 4 m in a deposit. The water table is at the ground surface. Take the dry unit weight of soil as 1.7 g/cc and specific gravity as 2.7. (Take Υ_w = 10 kN/m^3 or 1.0 g/cc)   **[5 Marks]**