DEPARTMENT OF CIVIL ENGINEERING
MID Term Re-Exam (*Spring Semester 2020*)

Subject: Geotechnical Engineering-II
Duration: 5 Days
Instructor: Engr. Liaqat Ali
Total Marks: 30

Note: Attempt all questions.

Q.NO (01) **(5+5)**

A. Define the following terms:
   1. Plastic Equilibrium
   2. Angular Distortion
   3. Compressive index
   4. Ultimate Bearing Capacity
   5. Poission Ratio of soil.
B. A 6m tall steel wall retaining the soil that has the following properties:
   - C=0
   - $\emptyset$=28°
   - Υ= 20.5 KN/m³

And the ground surface behind the wall is inclined at a slope of 4 horizontal and 1 vertical. The wall has moved sufficiently to develop passive condition. Determine the total normal and shear forces acting on the back of this wall usking Coloumb's Theory.

Q.NO(02) **(5+5)**

A. Write the assumptions of Terzaghi's bearing capacity theory.
B. What is the maximum safe load which can be supported by rectangular footing 2m by 3m with a safety factor of 3. The base of the footing is at 1.6m below the ground surface. The unit weight of soil is 18KN/m³ . The angle of shear resisting $\emptyset$=20° (N_c=14.8, N_q=6.4, N_Υ=2.9). Unit cohesion C_u=20 KN/m². Use Meyerhof analysis.

Q.NO (03) **(5+5)**

A. Viod ratio of soil is 1.02, at stress 120KN/m² its void ratio decrease to 0.971 when the load increase to 180KN/m². Calculate:
   1. Find the compressive index of the soil.
   2. The total settlement of the stratum its thickness is 5m.
B. Explain components of settlement in detail.

*****************************Best of Luck*******************************