

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Describe the way to determine the minimum depth of the borings during the subsurface exploration. (10%)
2. Define the recovery ratio (5%) and the rock quality designation (RQD) (5%)
3. Plot the figure of bearing capacity failure in soil under a rough rigid continuous foundation proposed by Terzaghi and write down the name of each zone in the figure (10%)
4. Define the Standard Penetration Test (5%) ; The cone resistance (q_c) (5%) and frictional resistance (f_c) (5%) in CPT.
5. Describe the reason and how the groundwater table impacts the bearing capacity of a shallow foundation? (15%)
6. Assume the vertical stress is σ_0 . Regarding to the lateral earth stress at rest, Rankine active earth pressure (σ_a), and Rankine passive earth pressure (σ_p):
 - (1) Plot the Mohr circles of the above-mentioned three stress states and the line of Mohr-Coulomb failure criteria (10%)
 - (2) Derive the equations to describe the relations between the two principal stresses in Rankine active earth pressure case and the Rankine passive earth pressure case, respectively. (10%)
7. What is the effective area method proposed by Meyerhoff to get ultimate bearing capacity under eccentric loading (8%)
8. Plot the figures to explain how to obtain the active (6%) and passive earth pressure (6%) on a retaining wall with granular soil backfill using Coulomb's theory.