考試科目： 土壤力學與基礎工程

系所名稱： 河海工程學系碩士班大地工程組(大地工程領域)

**※可使用計算器**
1.答案以橫式由左至右書寫。2.請依題號順序作答。

1. 請說明何謂靜止土壓力係數(Coefficient of earth pressure) $K_0$ 並寫出粗粒土壤之 $K_0$ 公式。(10 %)

2. 請說明主動土壓力與被動土壓力並繪出土壓力與被動土壓力之莫爾圓示意圖，同時寫出主動土壓力係數與被動土壓力係數之公式。(10 %)

3. 請列舉至少 2 種淺基礎與深基礎之基礎型式。(10 %)

4. 請說明基礎之三種主要破壞模式與至少兩種基樁承載力之估計方法。(10 %)

5. 請說明下各試驗中可得之土壤參數：(a) 直剪試驗，(b) 滲透試驗，(c) 夯實試驗，(d) 單向度壓密試驗，(e) 三軸壓縮試驗。(10 %)

6. (a) What are the two parameters of soil's shear strength?
   (b) Mention the differences between these two parameters      (10 %)

7. Soil having a void ratio of 0.67 as it exists in a borrow pit is to be excavated and transported to a fill site where it will be compacted to a void ratio of 0.42. The volume of fill required is 2000 $m^3$.
   (a) Find the volume of soil that must be excavated from the borrow pit to furnish the required volume of fill
   (b) (b) If the water content in a borrow pit is 0.20, what is the water content in the fill site soil after it is compacted?      (15 %)

8. For the flow net shown in the Figure, find:

   (a) the quantity of seepage loss under the dam when $k = 4.8 \times 10^{-3}$ cm/s

   (b) the exit gradient

   (c) check the safety against piping

   (d) (d) the pressure distribution on the base of the dam      (25 %)



Impervious.