Assignment 6: Geotechnical Engineering II

Assigned date: 29 Apr 2023; Due date: 6 May 2023, 23:59 pm

Note 1. Submit your assignment electronically via CANVAS
Note 2. Show your homework clearly. When appropriate, illustrate your work with diagrams, and/or figures.

6.1 A long sandy slope has a slope angle of 30°. The effective friction angle of the sand is 36° and the effective cohesion is zero. The saturated unit weight of the sand is γ_{sat} = 19.8 kN/m^3.

(a) Evaluate the stability of the slope when it is dry.
(b) Evaluate the stability of the slope when the groundwater table is at the ground surface.
(c) List three key assumptions made in the infinite slope safety calculation method. State whether each of the assumptions would lead to a safe or unsafe design.

6.2 Which of the following regarding landslide risk is **NOT TRUE**?

A. Frequent inspections of slopes do not decrease landslide risk
B. Improving the stability of existing slopes reduces the probability of slope failure
C. Implementing high technical standards reduces probability of slope failure
D. Good land uses reduce risks by minimizing the possible consequences of potential landslides

6.3 Hong Kong has a large number of slopes that require stabilization. Which were the measures taken in the Landslip Prevention Programme to minimise the landslide risk?

i. evaluated the risks of the slopes to be stabilised
ii. prioritised the slopes in terms of their risks
iii. depending on fund available, upgraded several hundreds of slopes per year
iv. implemented a slope maintenance plan

Which of the following options is **CORRECT**?

A. i and ii
B. i and iii
C. i, ii and iii
D. all