

**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.

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

- (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