編號： 53

國立成功大學 108 學年度碩士班招生考試試題

系　　所：地球科學系

考試科目：科學英文

考試日期：0224，節次：1

※ 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. Translation (70%)

Please translate the following two paragraphs accurately and concisely into Chinese.

(1) How do volcanic eruptions generate tsunamis? (30%)

Although relatively infrequent, violent volcanic eruptions represent also impulsive disturbances, which can displace a great volume of water and generate extremely destructive tsunami waves in the immediate source area. According to this mechanism, waves may be generated by the sudden displacement of water caused by a volcanic explosion, by a volcano's slope failure, or more likely by a phreatomagmatic[1] explosion and collapse of the volcanic magmatic chambers. One of the largest and most destructive tsunamis ever recorded was generated in August 26, 1883 after the explosion and collapse of the volcano of Krakatoa (Krakatau)[2], in Indonesia. This explosion generated waves that reached 135 feet, destroyed coastal towns and villages along the Sunda Strait[3] in both the islands of Java and Sumatra[4], killing 36, 417 people. It is also believed that the destruction of the Minoan civilization[5] in Greece was caused in 1490 B.C. by the explosion/collapse of the volcano of Santorin[6] in the Aegean Sea[7].

[1] phreatomagmatic 蒸氣岩漿

[2] the volcano of Krakatoa 喀拉喀托火山

[3] Sunda Strait 巽他海峽

[4] Java and Sumatra 爪哇與蘇門答臘

[5] Minoan civilization 米諾斯文明

[6] the volcano of Santorin 聖托里尼火山

[7] Aegean Sea 愛琴海

*This paragraph is adopted from the website of International Tsunami Information Center.

(2) Slope Stability (40%)

The slope of a pile of material has a natural angle of repose[1] that is maintained by friction between the individual particles. This is true both of slopes that are consolidated (in which the particles are joined) and those that are unconsolidated (in which they are loose). If the angle is steepened or disturbed, the pile will collapse until it reaches a more stable position. Masses of material will also start to move, under the influence of gravity, if the cohesive strength is altered by the presence of water, additional weight, or sudden movement such as an earthquake. Any of these factors can drastically alter the equilibrium of the mass, and cause it to collapse. Vast amounts of unstable unconsolidated and consolidated material are found all over the Earth's surface both on land and beneath the sea. Much of this is in slopes that are close to their maximum angle of repose and, if triggered, will fail.

[1] angle of repose 靜止角；安息角

*This paragraph is adopted from *Earth, p.116*, ISBN: 1-4053-0018-3.

2. Composition (30%)

Please choose ***one*** of the following topics and write down a short essay.

(1) Do you think there will be a destructive tsunami occurring in Taiwan? Why or why not?

(2) Please briefly describe the major mechanisms for the formation of the present Taiwan island.