

※ 注意：請於試卷上「非選擇題作答區」內依序作答，並應註明作答之大題及其題號。

一、名詞解釋 [每題 5%，共 25%]

1. Adiatat
2. Wadati-Benioff zone or Benioff zone
3. Potential temperature
4. Geoid
5. Rayleigh number

二、簡答題 [共 75%]

1. (a)重力自由修正(free-air correction)的用意何在？(b)海溝的自由空間重力異常(free-air gravity anomaly) 及布蓋重力異常(Bouguer gravity anomaly)為正值或負值？請解釋原因。 [12%]
2. Define “seismic moment” and explain why the moment magnitude is more reliable than magnitude determined from body-waves or surface waves? [10%]
3. 當地層速度不隨深度變化時(即均勻半空間)，會對 Rayleigh wave 和 Love wave 的生成與頻散 (dispersion)造成什麼影響？ [6 %]
4. Since there is no fixed point on the Earth’s surface, what is the so-called “absolute” plate motion and how is it measured? [5%]
5. (a) What is “triple junction”? (b) What does “stable” mean when we discuss the stability of a triple junction? (c) Is the triple junction shown in Figure 1 stable (arrows represent plate motion)? [10%]

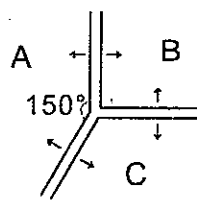


Figure 1.

- 6 請簡述 P 與 S 波 seismic shadow zone 的發生距離、原理以及此現象與地球構造之間的關係。 [10%]
7. (a) 地函的 transition zone 出現在什麼深度範圍？(b)此處的礦物和波速發生什麼變化？(c)在較冷的隱沒板塊所量到的 transition zone boundaries 相較於周遭區域會有什麼改變？ [12%]
8. Describe the thermal and seismic properties of “lithosphere” in contrast to the mantle beneath it. [10%]