以下共 9 個試題，每題各 12 分，請盡量作答，若所得分數超過 100 分，則以 100 分計算。回答題目時，請於試卷上標明所回答的題目編號，各題需適當論述或列出計算式。請注意，答案若無文字說明或計算推演者，將不考慮給分。

1. Compare and contrast continental and oceanic lithosphere.
2. (a) Show that frictional forces are not the gradient of a potential, and (b) why is the surface of a liquid at rest horizontal?
3. Over a typical ocean spreading centre, the free-air gravity anomaly is approximately zero and the Bouguer anomaly is large and negative. why?
4. If the area of the oceanic crust is 4.0 x 10 km^2 and new seafloor is now being created at the rate of 2.5 km^2 /yr, what is the mean age of the oceanic crust? Assume that the rate of seafloor creation has been constant in the past.
5. Estimate the pressure expected at a depth of 1000 km in the earth. Please take the averaged thickness of crust into calculation. The densities for crust and mantle can be dealt as 2.8 g/cm^3 and 3.3 g/cm^3, respectively.
6. To get a feel for the distance and time scales in seismic wave propagation, consider waves propagating in a material with velocity 8 km/s.

   (a) find the wavelengths of waves with periods of 0.1 s, 1 s, and 100 s.

   (b) find the periods and frequencies of waves with wavelengths of 1 m, 1 km, and 100 km.
7. Is the occurrence of earthquake predictable? Please depict your opinion/inference for this issue.
8. We can estimate the age of the seafloor using paleomagnetic method. Why we can do that, and how do the oceanic basement and sediments on top of the basement obtained their magnetization, respectively?
9. What is IGF (International Gravity Formula)? What is IGRF (International Geomagnetic Reference Field)? Please describe the steps you need to take when deriving gravity and magnetic anomaly data from field measurements, respectively.

試題隨卷繳回