

國立中央大學 109 學年度碩士班考試入學試題

所別：地球科學學系地球物理 碩士班 不分組(一般生)
地球科學學系地球物理 碩士班 不分組(在職生)

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科目：地球物理學

本科考試禁用計算器

*請在答案卷(卡)內作答

1. 地球磁場

- (a) How does the earth's magnetic field vary over periods of 1 day, 1 year, 100 years, 10,000 years, and > 1 Ma? What are the causes of these variations? (20%)
- (b) What observations have been made regarding the character of the earth's magnetic field during reversals? (10%)

2. 重力測勘

- (a) Explain the following terms: (1) regional gravity anomaly (5%); (2) residual gravity anomaly (5%)
- (b) You have been asked to perform a gravity survey to characterise a spherical ore body that has been identified with a borehole. The density of the ore is ρ_o kg/m³ and the density of the surrounding sediment is ρ_s kg/m³. The depth to the top of the ore body is d km, and its radius is R km.
- (1) What is the maximum gravity anomaly you would expect? (5%)
- (2) What is the half-width of the anomaly? (7%)
- (3) Sketch the anomaly that you would expect to see, labelling the important features of your sketch. (3%)
- On the same sketch, draw and label a profile you might expect if the anomaly was shallower. (5%)

3. 地電測勘

- (a) Explain the difference between resistance and resistivity. (10%)
- (b) Why are the characteristics of fluids in porous rock layers important in geoelectrical surveys? (5%)

4. 綜合部分

- What are the advantages/disadvantages of using: refraction seismology, heat flow, magnetic surveying, resistivity surveying, and gravity to determine: (a) depth to bedrock, (b) depth to the water table, (c) bedrock lithology, (d) crustal thickness? (25%)

參考用