

國立中央大學八十六學年度碩士班研究生入學試題卷

所別： 地球物理研究所 不分組 科目：

地球物理學

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- 1) Explain the following terms: 30%
 - a) Eötvös effect
 - b) Airy phase
 - c) Chandler wobble
 - d) Asthenosphere
 - e) diapir
 - f) inclination
 - g) magnetic permeability
 - h) Poisson's ratio
 - i) Curie point
 - j) Moho-discontinuity
- 2) Show that for a uniform sphere of radius a , in which the P-wave velocity is α , the travel time curve is given by $T=2(a/\alpha)\text{Sin}(\Delta/2)$, where Δ is the epicenter distance. 10%
- 3) Why does the seismic wave for a model, in which velocity increases with depth, propagate toward the shallow zone with a lower velocity, please explain it. 10%
- 4) Please derive the relationship of seismic waves between the group velocity and the phase velocity. 10%
- 5) Please depict the ray paths of PP, PKP, PKIKP, PKIKPPKIKR and sSP for seismic waves penetrating the earth. 10%
- 6) Explain the possible forces acting on the lithospheric plates which drive or resist the motion relative to each other and the mantle. 15%
- 7) Based on the isostatic equilibrium, how could the high mountain and deep valley exist on the earth and how to correct your field data if you made a gravity survey, and explain under what condition there is no gravity low on the map of Bouguer Anomaly in a mountain region relative to the plain area. 15%