

Structure and Composition of the Earth's Interior (GEO4-1401)

Tentamen - 5 November 2008

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The numbers in () indicate the percentage for evaluation. No documents are allowed during the examination, and calculators are not useful. Please write clearly and don't forget to indicate your name.

1. (20) What kind of data do geochemists rely upon to infer mantle chemistry? How do they interpret these data?
2. (20) Briefly describe the main seismic discontinuities in the mantle and what causes them.
3. (20) I would argue that the dynamics of the Earth is best described by thermo-chemical convection. Would you agree or not? Why?
4. (20) In the lowermost mantle, seismic tomography shows that relative variations in shear wave velocity (dV_s/V_s) and variations in bulk sound velocity (dV_ϕ/V_ϕ) are anti-correlated. How can this be explained?
5. (20) Why is it so difficult to get a realistic picture of the density distribution inside the Earth? Why is it important to know density variations and how are they estimated?

Good luck.