

**BIRKBECK COLLEGE
(University of London)**

BSc EXAMINATION

SCHOOL OF SCIENCE

DEPARTMENT OF EARTH AND PLANETARY SCIENCES

MAGMATIC PROCESSES

EASC029H6

15 CREDITS

Tuesday 17 May 2016

10:00- 13:00

INSTRUCTIONS

Answer THREE questions

ALL QUESTIONS CARRY EQUAL MARKS

1. Explain how studies of incompatible and compatible trace elements can be used to investigate partial melting processes in the mantle.
2. Outline and discuss the petrological and geochemical evidence for TWO of the following processes:
 - (a) mixing between magmas of different compositions;
 - (b) immiscibility of magmas;
 - (c) contamination of magmas by the continental crust.
3. Give an account of the different ways in which granitoids can be classified and explain how the classifications may be related to the different origins of granitoid magmas.
4. Discuss how radiogenic isotopic data can provide evidence for the origin of basaltic magmas erupted at mid-oceanic ridges and intraplate oceanic islands.
5. Describe the different components that may contribute to subduction-zone magmatism and explain the evidence for these different components observed in the erupted products.
6. Discuss the nature and origin of igneous carbonatites, including reference to both intrusive and extrusive forms.