

**BIRKBECK COLLEGE
(UNIVERSITY OF LONDON)**

BSc EXAMINATION

SCHOOL OF SCIENCES

Department of Earth and Planetary Sciences

INTRODUCTION TO GEOLOGY (THEORY)

EASC001S4

30 Credits

Thursday 7 May 2015

10.00 -13.00

INSTRUCTIONS

Answer SIX questions.

Use annotated diagrams wherever possible.

Where a question is split into sections (e.g.: describe THREE of the following), marks will be apportioned equally between each section.

- 1) When identifying minerals in hand specimen explain the terms hardness, habit, cleavage, streak and colour.
- 2) Give an account of the optical properties in both plane polarised light (PPL) and crossed polars (XP) of:
 - a) quartz;
 - b) biotite;
 - c) clinopyroxene;
 - d) hornblende.
- 3) Classify igneous rocks according to their mineralogy, chemistry and texture.
- 4) Give an illustrated account of the following:
 - a) anticline and syncline;
 - b) angular unconformity;
 - c) cleavage-bedding relationships around major folds.
- 5) Give an illustrated account of the following structural features and state in which tectonic settings you would expect to find them:
 - a) reverse fault;
 - b) normal fault;
 - c) strike-slip fault.
- 6) Show using illustrations BOTH a) the structure of oceanic crust and b) how magnetic anomalies within oceanic crust have assisted in our understanding of plate tectonics.
- 7) Describe, using illustrations, BOTH basaltic and silicic volcanic products.
- 8) Outline a classification scheme for regional metamorphic rocks.
- 9) Using the right-hand rule, give an illustrated account of how to take a strike and dip.

10) Describe THREE of the following sedimentary depositional environments:

- a) desert;
- b) delta;
- c) glacial;
- d) lagoon.

11) Using illustrations give an example and an account of contact metamorphism.

12) Explain compositional and textural maturity in clastic sedimentary rocks. How can observations of these features be used to understand transportation history?