BIRKBECK COLLEGE
(UNIVERSITY OF LONDON)

BSc EXAMINATION

SCHOOL OF SCIENCES

DEPARTMENT OF EARTH AND PLANETARY SCIENCES

INTRODUCTION TO GEOLOGY (THEORY)

EASC001S4

30 CREDITS

Tuesday 3 May 2016

10:00- 13:00

INSTRUCTIONS

(Answer **SIX** questions from twelve. 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) Describe the properties used to identify minerals in thin-section, both in plane polarised light (PPL) and crossed polars (XP).

2) Describe the differences between joints, veins and stylolites.

3) Give an account of the optical properties in both plane polarised light (PPL) and crossed polars (XP) of:
    a) olivine;
    b) hornblende;
    c) clinopyroxene;
    d) biotite.

4) Give an illustrated account of :
    a) strike and dip using the right-hand rule;
    b) true thickness and apparent thickness of a bedded rock unit.

5) How have Earths' crust, mantle and core been revealed by seismic waves?

6) Using mineralogy, chemistry and texture, outline a classification scheme for igneous rocks.

7) Describe how carbonates formed in different depositional environments can be classified using Dunham's scheme.

8) Give an illustrated account of the following :
    a) anticline and syncline;
    b) angular unconformity;
    c) cleavage-bedding relationships around major folds.

9) Give an account of the following features and state in which tectonic setting you would expect to find them:
    a) reverse fault;
    b) normal fault;
    c) strike-slip fault.

10) Describe using illustrations:
    a) structure of oceanic crust;
    b) features of a lava flow;
    c) chilled margin to a dyke.

11) Describe **THREE** of the following sedimentary depositional environments:
    a) desert;
    b) delta;
    c) glacial;
    d) river.

12) Outline a classification scheme for regional metamorphic rocks.