BIRKBECK COLLEGE
(University of London)

BSc EXAMINATION

SCHOOL OF SCIENCE

DEPARTMENT OF EARTH AND PLANETARY SCIENCES

GEOLOGICAL HAZARDS (THEORY)

EASC044H6

15 CREDITS

Monday 9 May 2016

10:00 -13:00

INSTRUCTIONS

Answer THREE questions.

1. Discuss earthquake recurrence on fault systems affected by elastic interaction, commenting on how this relates to instrumental, historical and archaeological records of earthquakes.

2. Describe suggested earthquake precursors and discuss whether these are useful when informing populations of potential earthquake hazards.

3. Describe the components of a volcanic plume generated by a highly explosive eruption and present at least one example to demonstrate that volcanic sulphate aerosols produced during these eruptions have the potential to interfere with solar radiation budgets and lead to global tropospheric cooling. **[50%]**

   Give a brief account of the 2010 Eyjafjallajökull eruption and the meteorological conditions at the time. Demonstrate why the ash plume had such a profound impact on air transport and the economy. **[50%]**

4. Compare and contrast the characteristics of pyroclastic density currents and lahars (you do not need to consider their modes of generation). Use examples to briefly illustrate the main impacts that these hazards may have.

5. Describe the three components of palaeoflood reconstruction defined by Baker (1989) and discuss the potential value of palaeoflood analysis for flood forecasting.

6. Compare the strengths and weaknesses of deterministic and probabilistic analysis in hazard risk analysis.