

**BIRKBECK COLLEGE
(University of London)**

BSc EXAMINATION

SCHOOL OF SCIENCE

DEPARTMENT OF EARTH AND PLANETARY SCIENCES

PALAEOCLIMATOLOGY

SCES014H6

15 CREDITS

Thursday 12 May 2016

10:00 -13:00

INSTRUCTIONS

Answer THREE questions.

1. Discuss the use of climate modelling in palaeoclimate research including recent model developments, sensitivity studies and data-model comparison.
2. Explain how oxygen isotopes in ocean sediments reflect changes in Earth's climate and outline the principal features of the Cenozoic record of $\delta^{18}\text{O}$ from benthic foraminifera.
3. Describe the climate transition from the Last Glacial Maximum (LGM) to the Early Holocene. Include a discussion of the relevant climate forcings and the climate response (both modelled and observed).
4. Explain the links between surface uplift, continental weathering and atmospheric CO_2 concentrations. Give examples of how palaeoclimatic proxies can be used to investigate these links.
5. Using evidence of past climate change, discuss what we do and do not know about the climate of the future.
6. (a) Explain how the El Niño Southern Oscillation (ENSO) operates in the present-day. (b) Evaluate and discuss the evidence for ENSO variability prior to the Holocene, including the possibility of a permanent El Niño State. (c) What are the predictions of future ENSO variability?