# PIONEER JUNIOR COLLEGE
**PRELIMINARY EXAMINATION 2015**

**HIGHER 2**

## GEOGRAPHY 9730/01

Paper 1 Physical Geography

**September 2015**
**3 hours**

Additional Materials: Answer Booklet / Paper
1 Insert
World Outline Map

### READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.
Write in dark blue or black pen on both sides of the paper.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

### Section A
Answer **all** questions

### Section B
Answer **two** questions, each from a different topic.

The Insert contains all the Figures and Photographs referred to in the question paper.
Diagrams and sketch maps should be drawn whenever they serve to illustrate an answer.
The world outline map may be annotated and handed in with relevant answers.
You are reminded of the need for good English and clear presentation in your answers.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **5** printed pages.

## Section A

## Physical Geography (H2)

Answer **all** questions in this section.

Questions 1 and 2 carry 13 marks each, and Questions 3 and 4 carry 12 marks each. You should allocate your time accordingly.

### Lithospheric Processes, Hazards and Management

**1** Fig. 1A shows the extent of lava flows from the Mauna Loa volcano, Hawaii, USA, since 1843, and Fig. 1B shows a hazard map for the same volcano.

(a) Identify **two** primary hazards resulting from lava flows and briefly explain how they are considered hazardous. [3]

(b) Using Figs 1A and 1B, examine the relationship between the lava flows and the hazard risk. [4]

(c) Outline the information that may be used in producing a volcanic hazard risk map. [6]

### Atmospheric Processes, Hazards and Management

**2** Fig. 2A ~~which~~ shows information about night time temperatures in a large city and the surrounding rural area in the UK in March 2009. Fig. 2B shows an incomplete temperature graph of the transect A-B ~~in Fig. 2~~.

(a) Complete the plotting of the temperature graph in Fig. 2B (working copy). [3]
(*It is found at the back of your cover page*)

(b) Using both Figs. 2A and 2B, account for the temperature differences between points A and B. [4]

(c) Explain how the following might cause variations in the intensity of this city's heat island: [6]
(i) a change in local weather conditions
(ii) a different time of day
(iii) a different season.

## Hydrologic Processes, Hazards and Management

**3** Fig. 3 shows a section drawn across a river. Table 1 gives mean velocity and bedload data for this section. ~~[Source: Diagram and table constructed using data from a student's fieldwork notes]~~

Comment [M1]: Shouldn't this be in the Inserts with the source itself?

(a) With reference to Fig. 3 and Table 1, describe and explain the relationship between: [6]
- (i) depth and velocity
- (ii) velocity and bedload size.

(b) Describe and explain the changes in discharge, velocity and load that occur between the source and the mouth of a river. [6]

## Lithospheric, Hydrologic & Atmospheric Processes, Hazards and Management

**4** Fig. 4A shows the climate chart (climograph) for Nukus.
Fig. 4B shows changes to the surface area of water in the Aral Sea basin, 1960 to 2009.
Fig. 4C provides information about the surrounding area of the Aral Sea in Central Asia.

(a) Using Fig. 4A, ~~Identify~~ identify and briefly describe the climate of Nukus. [2]

(b) Using Fig. ~~4A~~4B, briefly describe the changes in surface area of water in the Aral Sea basin since 1960. [2]

(c) Using Fig. 4C, examine the possible hydrological and meteorological impacts of human activity for the Aral Sea and the surrounding area. [8]

## Section B

Answer **two** questions, each from a different topic.

### Lithospheric Processes, Hazards and Management

**5 Either**

(a) Using a well-annotated diagram, describe how the metamorphic rocks can be formed at the various plate margins. [9]

(b) 'The impact of earthquakes is greater in Developed Countries (DCs) than Less Developed Countries (LDCs)'.
Discuss. [16]

**5 Or**

(a) With the aid of diagrams, compare the nature and form of bornhardts and tors in the tropics. [9]

(b) 'Removal of weathered materials is essential to the formation and development of granite landforms.'
To what extent do you agree with this statement? [16]

### Atmospheric Processes, Hazards and Management

**6 Either**

(a) With the aid of an annotated diagram, describe the scale and major characteristics of a tropical cyclone. [9]

(b) "Economic factors and not physical factors determine the severity of the impacts of tropical cyclones (hurricanes, typhoons)."
With reference to specific examples, evaluate this statement. [16]

**6 Or**

(a) Explain how atmospheric stability and atmospheric instability occur. How can these conditions produce different weather? [9]

(b) 'The movement of Inter-Tropical Convergent Zone (ITCZ) has a major influence on the characteristics of climatic zones in the Tropics'.
To what extent is this statement true? [16]

## Hydrologic Processes, Hazards and Management

**7 Either**

(a) Define the term, ‘recurrence interval’. Explain how it is calculated and used in flood prediction. [9]

(b) Using examples, assess the extent to which the effects of floods may be mitigated. [16]

**7 Or**

(a) With the help of a diagram, explain how the river velocity can affect transport and deposition of sediment in a channel. [9]

(b) How and why do river regimes vary? [16]