

## **PIONEER JUNIOR COLLEGE** PRELIMINARY EXAMINATION 2013

**HIGHER 2** 

# GEOGRAPHY

Paper 1 Physical Geography

September 2013

9730/01

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 **6** printed pages and **1** blank page.

## **Section A**

## Physical Geography (H2)

Answer **all** questions in this section

Questions 1, 2 and 3 carry 12 marks and Question 4 carries 14 marks. You should allocate your time accordingly

## Lithospheric Processes, Hazards and Management

1. Photograph A shows sub-surface limestone features in Meramec Cavern in Missouri, USA.

(a)	With the use of a labelled diagram, identify and describe the sub-surface features shown as A, B, C in the photograph.	[4]
(b)	Explain the formation of sub-features A, B and C.	[6]

- (b) Explain the formation of sub-features A, B and C. [6]
- (c) Briefly describe how the features may have change over time. [2]

## Atmospheric Processes, Hazards and Management

- 2 Fig. 1A shows the urban heat island of Dublin city and Fig. 1B shows the airflow patterns in Dublin city associated with an intense heat island.
  - (a) Describe and account for the temperature variations in Dublin city using [6] Figs. 1A and 1B.
  - (b) Explain briefly how would you carry out a field study to investigate the [6] microclimate of your school?

#### Hydrologic Processes, Hazards and Management

- 3 Table 1 shows the channel dimensions and variables for Streams A and B.
  - (a) Using the data given in Table 1, calculate the following and explain how [4] would you derive them for both Streams A and B:
    - (i) channel depth
    - (ii) hydraulic radius
  - (b) Explain how the characteristics of a channel affect stream velocity. [4]
  - (c) Justify which stream has higher stream competence and explain the likely [4] erosional processes associated with it.

## Lithospheric and Hydrological Processes, Hazards and Management

- **4** Fig. 2A shows the global distribution of deserts and Fig. 2B shows variations from mean annual precipitation.
  - (a) Describe and explain the distribution of hot deserts in relationship to the [6] variations from mean annual precipitation.
  - (b) Illustrate how the nature of rainfall in arid areas affects stores and flows [8] within the hydrological system.

## Section **B**

Answer two questions, each from a different topic. All questions carry 25 marks.

#### Lithospheric Processes, Hazards and Management

#### **5 EITHER**

(a)	Distinguish between igneous, sedimentary and metamorphic rocks.	[9]

(b) To what extent does formation of inselbergs (bornhardts) can be explained [16] by processes of weathering and erosion?

#### 5 OR

- (a) Using diagrams, explain how transform faults can occur. [9]
- (b) 'Volcanic activity has a greater impact on the human environment than it [16] does on the physical environment,' To what extent do you accept this statement?

#### Atmospheric Processes, Hazards and Management

#### **6 EITHER**

- (a) With the aid of a diagram, explain what happen to incoming solar radiation [9] as it entered the earth's atmosphere.
- (b) It is predicted that the effects of global warming might have a greater [16] impact on the physical environment than the human environment. Discuss.

## 6 OR

- (a) Explain how El Nino can lead to drought conditions. [9]
- (b) The intensity (frequency and duration) of droughts have been greatly [16] increased by human actions. To what extent do you agree with this statement?

## Hydrologic Processes, Hazards and Management

## 7 EITHER

- (a) Explain the role of thalweg and helicoidal flow in meandering channel. [9]
- (b) Evaluate the methods by which flood hazards might be mitigated. [16]

## 7 OR

- (a) Explain what is meant by the term *recurrence interval* and explain how it is [9] used in flood prediction.
- (b) "Politics play a major role in the management of trans-border river basins". [16] To what extent is this statement true?

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