

National Junior College SH2 Preliminary Examination 2016

GEOGRAPHY

9730/01

Paper 1 Physical Geography Higher 2 3 hours 24 August 2016

READ THESE INSTRUCTIONS FIRST

Answer **all** questions from Section A. Answer **two** questions from Section B.

You are advised to spend not more than one hour 30 minutes on Section A. All the Figures referred to in the questions are contained in the Insert. You should make reference to appropriate examples studied in the field or classroom, even where such examples are not specifically requested by the question. Sketch maps should be drawn whenever they serve to illustrate an answer.

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

Section A

Answer **four** questions from 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 Figs. 1A and 1B show information about an ash cloud following the eruption of an Icelandic volcano in 2010.

(c)	(i)	Name the tectonic plate boundary on which Iceland is located.	[1]
(b)	Explai	why this type of plate boundary produces a cloud of volcanic ash.	[4]
(a)	Using	Figs. 1A and 1B, describe the nature and spread of the ash cloud.	[4]

(ii) Name and explain the geological feature which separates the two plates. [3]

Atmospheric Processes, Hazards and Management

- Fig. 2A shows average Sea Surface Temperature (SST) anomalies on 6 January 2016.
 Fig. 2B shows an excerpt of a news article detailing the impacts of the El Nino in West Africa.
 - (a) How does the information provided in Fig. 2A confirm the occurrence of the El Nino? [2]
 - (b) Explain the development of the El Nino and its impact in the Pacific region shown in Fig. 2A. [5]
 - (c) Explain ways in which the impacts of drought in West Africa mentioned in Fig. 2B could potentially be mitigated. [5]

Hydrologic Process, Hazards and Management

3 Fig. 3A is a map showing the characteristics of the drainage basins of Clapham Beck and Austwick Beck.

Figs. 3B and 3C are storm hydrographs of Clapham Beck and Austwick, following the same storm.

- (a) Contrast the hydrographs shown in Figs. 3B and 3C. [4]
- (b) Use Fig. 3A to explain the contrasts between the hydrographs shown in Figs. 3B and 3C. [6]
- (c) How useful is river velocity in helping to determine the flood risk of each of the two rivers in Fig. 3A? [2]

Atmospheric and Hydrologic Processes, Hazards and Management

- **4** Fig. 4A shows the track and development of Hurricane (Tropical cyclone) Katrina in August 2005 and Fig. 4B shows areas of flooding brought about by Katrina in the city of New Orleans, Louisiana, USA.
 - (a) (i) Describe the track and development of Katrina from 23 to 30 August 2005 shown on Fig. 4A. [4]
 - (ii) Suggest why Katrina was downgraded to a tropical storm at 20.00 on 29 August. [2]
 - (b) Using Fig. 4B, explain how the physical and human features of the Mississippi river and New Orleans contributed to the impact of Katrina on New Orleans. [6]
 - (c) Briefly describe one immediate local response to the possible impacts of Katrina. [2]

Section B

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

Lithospheric Processes, Hazards and Management

5 EITHER

- (a) With the aid of a diagram, explain how the rock cycle can be used to explain differences between igneous, sedimentary and metamorphic rock. [9]
- (b) 'The properties of rocks like granite and limestone is a major factor that affect the nature and rate of weathering.' To what extent do you agree with this statement? [16]

5 OR

- (a) Describe the characteristics of earthquakes. Outline methods that can be used for the measurement and description of the magnitude of earthquakes. [9]
- (b) 'Hazard mapping is the most effective way of reducing the impact of earthquakes on the human environment.' How far do you agree with this view? [16]

Atmospheric Processes, Hazards and Management

6 EITHER

(a) Describe and explain how the climate of a large urban area differ from that of the rural area.

[9]

(b) Assess the extent to which topographic effects and ocean currents are important in influencing the climatic zones in Tropical Africa and Asia. [16]

6 OR

- (a) Why are some areas of the world more vulnerable to drought than others? [9]
- (b) Examine the extent to which it is possible to predict, mitigate and respond to the impacts of drought. [16]

Hydrologic Processes, Hazards and Management

7 EITHER

- (a) Explain how abstraction of water, building of dams and urbanization might have affected flows and stores of water within a drainage basin. [9]
- (b) 'River flooding needs to be addressed through a range of solutions, but working with nature rather than against it is the key to a more flood resilient future.'
 Discuss the validity of this statement. [16]

7 OR

- (a) Define terms: *drainage density*; *stream order* and *bifurcation ratio*. Explain how they may be used to describe the characteristics of a drainage basin. [9]
- (b) To what extent do conditions beyond the channel help to explain the formation of meandering and braided channel patterns and the differences between them? [16]