

SERANGOON JUNIOR COLLEGE JC2 PRELIMINARY EXAMINATION 2013 Higher 2

GEOGRAPHY

9730/01

Paper 1 Physical Geography

Thursday 22 Aug 2013 3 hours

Additional materials: Writing Paper 1 Insert

READ THESE INSTRUCTIONS FIRST

Write your name and civics group 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, highlighter, 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 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.

Section A

Answer **all** the 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** Fig. 1 shows the East African Rift Valley.
 - (a) Referring to Fig. 1, describe the nature and pattern of tectonic features of the East [4] African Rift Valley.
 - (b) Explain the tectonic processes that have given rise to the features you described in [5] (a).
 - (c) Justify the assertion that the East African Rift Valley may be the site of a future [3] ocean.

Atmospheric Processes, Hazards and Management

- 2 Fig. 2 shows major pressure and wind systems at the earth's surface in January and July.
 - (a) Using Fig. 2, compare the high and low pressure areas in January and July. [3]
 - (b) Explain the development of the high pressure areas in (a). [4]
 - (c) Show how the high and low pressure conditions shown in Fig. 2 influence the global [5] pattern of surface winds and the global pattern of precipitation.

Hydrologic Processes, Hazards and Management

- **3** Fig. 3 shows restoration work along the Kissimmee River in Florida, USA. The restoration work is a project to re-meander a stretch of the river that was channelized in the 1960s. Photograph A shows a straightened (channelized) stretch of the river. Photograph B shows a re-meandered (restored) stretch of the river.
 - (a) The straightened sections along the Kissimmee River are now seen as backfilled [2] channels in Fig. 3. Suggest why river straightening (channelization) was carried out.
 - (b) With reference to Photographs A and B, outline the negative consequences of river [5] straightening on the river basin.
 - (c) Imagine that you are employed by the Florida state government to look into [5] constructing a hazard map to mitigate flood hazard along parts of the Kissimmee River. Suggest the steps you would take to construct a flood hazard map.

Atmospheric and Hydrologic Processes, Hazards and Management

- 4 Fig. 4A shows sea-level pressure anomalies (departures from normal) at Darwin and Tahiti between the years 1979 1998. Fig. 4B shows the global impact of El Nino and the locations of Darwin and Tahiti.
 - (a) Using Fig. 4A, describe the nature of the sea-level pressure anomalies at Darwin [2] and Tahiti during an El Nino event.
 - (b) Explain how such sea-level pressure anomalies occur. [4]
 - (c) With reference to Fig. 4B, outline the effects of an El Nino event on the climates of [4] regions bordering the eastern and western Pacific Ocean.
 - (d) How might a prolonged El Nino event affect the sediment yield of rivers? [4]

Section B

Answer **two** questions, each from a different topic. Each question carries 25 marks.

Lithospheric Processes, Hazards and Management

5 EITHER

- (a) With the aid of diagrams, describe the development of deep weathered profiles. [9]
- (b) To what extent is an understanding of geology fundamental in explaining the [16] weathering of granite and its resultant landforms?

5 OR

- (a) How can the Himalayas help to explain the theory of plate tectonics? [9]
- (b) To what extent and why are earthquakes generally more hazardous events than [16] volcanic eruptions?

Atmospheric Processes, Hazards and Management

6 EITHER

- (a) With the aid of diagrams, explain how the day-time and night-time energy budgets are [9] different.
- (b) To what extent is latitude the most important factor in influencing the receipt of solar [16] radiation globally?

6 OR

- (a) Explain the possible effects of global warming on small island states. [9]
- (b) Explain how the effects of drought might differ between developed countries (DCs) and [16] less developed countries (LDCs) and evaluate the success of measures taken to reduce the effects of drought.

Hydrologic Processes, Hazards and Management

7 EITHER

- (a) With the aid of diagrams, explain how a pool and riffle sequence may lead to the [9] development of meanders.
- (b) To what extent can braided channels be considered as unstable channel patterns in the [16] landscape?

7 OR

- (a) Explain why storm runoff may follow different hydrological pathways in different types of [9] drainage basins.
- (b) Examine the factors that need to be considered for the effective management of [16] conflicts of interest in a transborder drainage basin.

End of Paper

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6