



MERIDIAN JUNIOR COLLEGE
PRELIMINARY EXAMINATION
Higher 2

H2 Geography

9730/01

Paper 1 Physical Geography

16 Sept 2015

3 Hours

Additional Materials: Answer Paper
1 Insert
World Outline Map

READ THESE INSTRUCTIONS FIRST

Write your name, civics group and index number 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.

Diagrams and sketch maps should be drawn wherever 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.

Start each question on a fresh sheet of paper.

At the end of the examination, fasten this **cover sheet** and all your work securely together in **chronological order**.

The number of marks is given in the brackets [] at the end of each question or part question.

This document consists of 5 printed pages and 1 blank page.

Name: _____

Civics Group: _____

Index Number: _____

Qn no. (Section A)	Marks	Qn no. (Section B)	Marks
1		5 Either/ Or*	
2		6 Either/ Or*	
3		7 Either/ Or*	
4			
Total			

*Please **circle** the question number attempted and **delete** Either / Or accordingly

Section A

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 1 shows a road in the **limestone** region of Warren County, Kentucky, that collapsed on February 25, 2002.

- (a) Briefly describe the characteristics of limestone and how it influences the chemical weathering of limestone. [3]

Composition: >80% CaCO_3 causing carbonation solution by acidified rainwater
Structure: Non-clastic sedimentary rock, crystalline and non-porous but pervious due to rectangular jointing → allows ingress of rainwater → sub-surface carbonation solution

- (b) Provide a geomorphological account for the collapse of the road. [6]

Formation of caves: carbonation solution along horizontal master joints result in creation of underground caves (diagram)
Collapse of roof: Over time, as the cave enlarges, the overlying soil and rock cannot be supported anymore and they collapse into the cavern below → collapse of road

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- (c) Briefly explain the formation of limestone pavements. [3]

Glacial activity (1) and carbonation solution (2)

Atmospheric Processes, Hazards and Management

2. Figs 1A and 1B show the position of the Inter Tropical Convergence Zone (ITCZ) and the mean pattern of surface winds in January and July respectively.

- (a) Explain what is meant by the term ITCZ.

Convergence zone characteristics (2) and causes (2) [4]

- (b) Location X is at 10°N 0°E. Describe and account for the changes in the [8]

pattern of rainfall experienced by location X in a year.

X experiences a Tropical Monsoon Climate with high rainfall during the months from May to Aug and periods of low rainfall at other times of the year. The reason for the uneven distribution of rainfall is due to the monsoonal pattern. (2m)

Explanation of monsoon (6 m)

Hydrologic Processes, Hazards and Management

3. Fig. 2 shows the drainage basin of the Rhone River in Europe and the river regime at selected locations along the river.

- (a) Describe the possible differences in channel morphology between Scion and Beaucaire.

Deeper wider and higher velocity. Lower slope. [4]

- (b) Give 1 reason why the shapes of the 2 hydrographs at Lyons (Saone and Rhone) are different.

Snowmelt [2]

- (c) Describe the steps you would take to obtain the values of discharge for the River Rhone at Scion.

Ref fieldwork package. [6]

Lithospheric and Hydrologic Processes, Hazards and Management

4. Fig. 3 shows some factors affecting processes operating on a slope.

- (a) Account for the overland flow likely to be experienced at locations A and B.

A: HOF – steep slope

B: SOF- base of slope and high water table [6]

- (b) Using the factors shown in Fig 4, explain the influence of climate on slope stability.

Water content, vegetation, undercutting of slopes... [8]

Section B

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

Lithospheric Processes, Hazards and Management

5 Either

- (a) Provide an account of the evidence for the plate tectonics theory. [9]

Mark scheme:

2m for PTT

2m each for well explained point

Max 7m if not all categories are explained

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- (b) To what extent can the variety of granite landforms be attributed to the characteristics of the rock? [16]

L3: Answer should include both arguments that show the role of composition and structure of granite in creating different landforms and be countered by the role of climate.

5 Or

- (a) Explain how cockpit karst and tower landscapes may have formed. [9]

Refer to notes.

(Explain the formation of cockpit karsts first, as they need to be formed before tower karsts can be formed)

- (b) With reference to specific examples, critically evaluate the effectiveness of strategies that have been employed to reduce the impacts of earthquakes. [16]

L3: Strategies are thoroughly evaluated with examples from both DCs and LDCs showing both examples of successful measures as well as shortcomings in each of the measures.

Atmospheric Processes, Hazards and Management

6 Either

- (a) Explain the difference between the day and night time energy budget. [9]

Ref to 4 factor vs 6 factor model in notes

- (b) Discuss the extent to which latitude is responsible for temperature variations between different places in the world.

L3: Answer examines the role of latitude and at least two other factors that affect temperatures of locations with the same latitude. [16]

6 Or

- (a) With the aid of diagram(s), describe the causes and characteristics of tropical cyclones. [9]

Ref notes

- (b) To what extent do you agree that excesses of rainfall are preferable to drought?

L3: Answer that takes into consideration at least 3 criteria of comparisons/ analysis to come up with a reasoned conclusion. [16]

Hydrologic Processes, Hazards and Management

6 Either

- (a) With the aid of a diagram or diagrams, explain the influence of relief and climate on overland flow in a drainage basin. [9]

HOF vs SOF diagram from notes.

Show how the nature of rainfall affects infiltration rates to generate HOF/SOF

Show how slope angle affects the rate of infiltration and hence form HOF/SOF.

- (b) Critically evaluate the view that the variety of channel patterns is attributed to conditions outside the channel rather than those within the channel. [16]

L3: Answer considers the role of channel morphology as well as conditions in the drainage basin that are essential to the formation of braided and meandering streams.

6 Or

- (a) Explain how Hjulstrom's curve may be used to explain the differences in river processes between upstream and downstream locations

along a river.

[9]

- (b)** With reference to one or more examples, assess the success of strategies adopted to manage the impacts of flood hazards in both DCs and LDCs. [16]

L3: Strategies are thoroughly evaluated with examples from both DCs and LDCs showing both examples of successful measures as well as shortcomings in each of the measures.

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