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DUNMAN HIGH SCHOOL PRELIMINARY EXAMINATION Year 6

HIGHER 2 GEOGRAPHY

9730/01

Paper 1 Physical Geography

Wednesday

16 September 2015

3 hours

READ THESE INSTRUCTIONS FIRST

Write your name and class clearly 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 the Photograph referred to in the question paper.
You should make reference to appropriate examples studied in the field or the classroom, even where such examples are not specifically requested by the question.
Diagrams and sketch maps should be drawn wherever they serve to illustrate an answer.
The outline world 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 all your work securely together.
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 including the cover page

[Turn over

Section A

Answer **all** questions from this section.

Lithospheric Processes, Hazards and Management

- 1 Fig. 1A and 1B are maps with information on seismic hazards in California. Fig. 1C shows the geology of California.
- (a) How well does the information in Fig 1A describe the distribution of economic losses shown in Fig. 1B? [4]
- (b) Based on information in Figs 1A and 1C **only**, explain how the difference in level of economic losses in Los Angeles (County A) and Tulare (County B) in Fig. 1B can be explained by geology. [3]
- (c) Discuss how seismic hazards maps like the one shown in Fig. 1A are mapped. [6]

Atmospheric Processes, Hazards and Management:

- 2 Fig 2A shows the trends in carbon dioxide (CO₂) emissions and global mean temperature change from 1850 to 2010. Figs 2B and 2C show some of the evidences of climate change.
- (a) With reference to information from Fig. 2A.
- (i) Compare the trends in carbon dioxide emissions with temperature change from 1850 to 2010. [3]
- (ii) Suggest reasons for the trends in carbon emissions and temperature change for the period 1950 to 2010. [5]
- (b) To what extent do Figs 2A, 2B and 2C show that rapid climate change has taken place in recent years? [4]

Hydrological Processes, Hazards and Management

- 3 Fig. 3A shows three sub-catchments of the River Soar, Leicestershire, England with similar geology and relief. River Upper Soar and River Sence have similar area and perimeter. Fig. 3B shows the hydrograph of River Wreake in response to a storm event.
- (a) With reference to information from Fig. 3A, describe and explain how the hydrograph characteristics of River Wreake in Fig 3B can be explained by basin characteristics. [5]
- (b) With reference to the two sub-catchments, River Upper Soar and River Sence in Fig. 3A,
- (i) calculate the bifurcation ratio for each sub-catchment [2]
- (ii) name the sub-catchment with the higher flood risk potential based on the respective bifurcation ratios [1]
- (iii) explain **two** actions that may be taken to reduce the risk of floods in this sub-catchment. [4]

Lithospheric and Hydrologic Processes, Hazards and Management

- 4 Photograph A shows a close-up of a limestone landform in a temperate climate.
- (a) Name the features **X** and **Y**, shown in Photograph A, which forms part of the limestone landform [2]
- (b) Explain the role of weathering in the formation of the limestone landform shown in Photograph A. [5]
- (c) Figs. 4A and 4B show two river regimes: **A** and **B** for two catchments with generally similar rainfall and basin characteristics but of different geology. One catchment is of shale and the other is of limestone.
- (i) Compare the main discharge characteristics between the two river regimes **A** and **B**. [3]
- (ii) Based on the discharge characteristics, identify the river regime for the catchment with limestone geology. [1]
- (iii) Explain why the river regime you have chosen in **c (ii)** is typical of limestone catchments. [2]

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 the formation and characteristics of the following landforms associated with tectonic activity: rift valley and island arc [9]
- (b) With reference to examples, discuss the extent to which the scale and nature of earthquake impacts are influenced by the magnitude and intensity of earthquake events? [16]

5 OR

- (a) Describe the role of plate tectonics in the rock cycle. [9]
- (b) Explain the nature of weathering processes operating in the tropical environments. Discuss the role of weathering in the development of granite landforms in tropical environments. [16]

Atmospheric Processes, Hazards and Management

6 EITHER

- (a) Distinguish between 'convectonal uplift', convergence uplift' and orographic uplift' [9]
- (b) To what extent do you agree that the precipitation characteristics of tropical climates can only be explained by the ITCZ (Inter-Tropical Convergence Zone)? [16]

6 OR

- (a) Fig. 5 shows the areas of formation, paths and months of occurrence of the tropical cyclones. Describe and explain the characteristics of tropical cyclones as shown in Fig. 5. [9]
- (b) With reference to examples, discuss the extent to which the hazardous impacts of tropical cyclones are determined by the level of development of a country? [16]

Hydrologic Processes, Hazards and Management**7 EITHER**

- (a) How does an understanding of *critical erosion velocity* and *settling velocity* help to explain how load is transported within a river channel? [9]
- (b) Explain how the development and form of channel patterns are a response to channel efficiency. [16]

7 OR

- (a) With the aid of diagrams, explain how rainfall events can result in variations in river discharge. [9]
- (b) With reference to an example or examples, discuss the view that, in the management of water resources, the nature of conflicts of interest are more varied, the extent of conflicts greater and more difficult to resolve between riparian states than within riparian states. [16]

END OF PAPER