Examination Period 3: 2016/17

GEO210817N

Module Title
Geomorphology

Level
Five

Time Allowed
Two hours

Instructions to students:

- Enter your student number **not** your name on all answer books.
- Answer **three** questions from **Section A** and **one** question from **Section B**.
- **Section B** is a seen paper. Questions have been distributed to candidates two weeks prior to the examination.
- Begin each **section** in a new answer book; label each answer book clearly with the section you are answering.
- Neither books nor notes may be taken into the examination.
- Students are **not** permitted to remove this examination paper from the examination room. For all purposes the examination paper remains the property of The University of Northampton.

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Section A

Answer three out of five questions.

Question 1

a. Provide a brief distinction between free and anchored dunes. (2 marks)

b. Explain the different conditions in which you would expect transverse, linear and star dunes to form. (6 marks)

c. Outline the patterns of wind and sand flow over a transverse dune. (9 marks)

Total: 17 marks

Question 2

a. Using annotated sketches, explain how and where sediment is deposited in two of the following fluvial environments, noting also the key characteristics of the sediment deposited:

i. Floodplains (5 marks)
ii. Alluvial fans (5 marks)
iii. Scroll bars (5 marks)

b. Explain how electrical conductivity and turbidity can, respectively, be used as surrogate measures for the dissolved and suspended sediment concentrations within a river. (7 marks)

Total: 17 marks

Question 3

a. Explain the difference between infiltration excess ('Hortonian') and saturated overland flow. (8 marks)

b. Explain the role of water in mass movements. (9 marks)

Total: 17 marks
Question 4

a. Explain the geomorphological significance of two of the following.
   
i. Isostasy (4 marks)
   ii. Eustasy (4 marks)
   iii. Tides (4 marks)

b. Explain briefly how studies of reservoir sediments over the last 100-200 years can help us reconstruct environmental change. (9 marks)

Total: 17 marks

Question 5

Study the accompanying aerial photographs (Figure 1; on the last page of this exam paper) of part of Florida, USA. The top one is from February 1995, and the bottom one from March 2016. The total width of each photograph is 3km.

a. Label the karstic features and note and label if there are any changes in these features over the 21 year interval. (7 marks)

b. Briefly explain, using diagrams if necessary, how the features identified in 5a would have formed. (5 marks)

c. Referring to evidence from the photographs (Figure 1), outline the main factors to be taken into consideration in relation to the further development of this land for building. (5 marks)

Total: 17 marks

End of Section A
Section B follows overleaf
Section B

Answer one question.

Question 6

With reference to case studies drawn from at least two process domains, explain how geomorphologists can contribute to understanding and responding to environmental hazards. (50 marks)

Question 7

Compare and contrast the role of water and wind in transporting and depositing sediment. Illustrate your answer with case studies. (50 marks)

Question 8

Explain how geomorphologists can obtain information about environmental change over the last ca. 1000 years. To what extent does the quality of information become less precise over longer timescales? (50 marks)

Case Study follows overleaf
Figure 1

End of Section B and Case Study
End of Paper

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