Surname

Centre Number



Other Names

**GCE A Level** 

1215/01

S17-1215-01

**GEOLOGY – GL5 Thematic Unit 1 Quaternary Geology** 

THURSDAY, 8 June 2017 – AFTERNOON

ONE of TWO units to be completed in 2 hours

|           | For Examiner's use only |                 |                 |
|-----------|-------------------------|-----------------|-----------------|
|           | Question                | Maximum<br>Mark | Mark<br>Awarded |
| Section A | 1.                      | 15              |                 |
| Section B | 2.                      |                 |                 |
|           | 3.                      | 25              |                 |
|           | 4.                      |                 |                 |
|           | Total                   | 40              |                 |

## **ADDITIONAL MATERIALS**

In addition to this and one other examination paper, you will need a calculator.

## **INSTRUCTIONS TO CANDIDATES**

Use black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page. Answer question 1 in Section A (15 marks) and one question from Section B (25 marks).

## **INFORMATION FOR CANDIDATES**

The number of marks is given in brackets at the end of each question or part-question. You are reminded of the necessity for good English and orderly presentation in your answers.

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### **SECTION A**

1. Figure 1a is a map of the area around Llangorse Lake, Powys showing Quaternary landforms.



**Examiner** only (a) Using your knowledge, describe one piece of field evidence that could be used in this area to determine the direction of ice flow. Explain your answer. [2] Refer to Figure 1a. The moraine ridges (1-4) in Figure 1a were deposited by a glacier during the last glacial (b) stage. Ridge 1 is the oldest moraine ridge. Describe the evidence for this interpretation. (i) [1] (ii) Explain the age distribution of deposition of moraine ridges in this area. [2] (iii) The shore of Llangorse Lake is 155 metres above sea level at present; the shore of glacial Lake Llangorse is estimated to have been 190 metres above sea level. Using Figure 1a, explain why the shore of glacial Lake Llangorse was so much higher than the surface of the present lake. [2]



Figure 1b shows the thickness of laminations in 3 zones (X, Y and Z) in part of the core samples at Location A on Figure 1a.

Examiner Using Figure 1b, calculate the mean thickness (in millimetres) of laminations in (C) (i) Zone X. Show your working. [2] ..... mm Figure 1c is a sedimentary log of some of the laminations from Zone Y in Figure 1b. The grain size distribution is typical of all the laminations from Zones X, Y and Z. 4 lamination thickness (mm) 3 2 1 clay silt grain size Figure 1c Explain the variation in grain size distribution identified in Figure 1c. (ii) [3] Refer to Figure 1a and Figure 1b. (iii)

5

Explain the change in the thickness of laminations from Zone X to Zone Z in terms of variations in glacial conditions. [3]



15

only

#### **SECTION B**

#### Answer one question only.

Write your answer in the remaining pages of this booklet.

**2.** *"Resistance to erosion of bedrock is the most significant factor in determining the topography of an area."* 

Evaluate this statement.

[25]

- **3.** (a) Describe the link between continental ice sheets and sea level change during the Quaternary.
  - *(b)* Evaluate the significance of ice core evidence in reconstructing Quaternary climatic change.

[25]

- **4.** (a) Describe how modern sedimentary environments can enable the reconstruction of former environments.
  - (b) Evaluate the significance of grain composition and texture in determining the biological, physical and chemical processes that form **carbonate** sediments.

[25]

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#### Acknowledgements

Source for **Figures 1a** and **1b** amended from *Carr, S.J. et al (eds) (2007) Quaternary of the Brecon Beacons Field Guide, Quaternary Research Association*