Surname	Centre Number	Candidate Number
Other Names		2

GCE A Level – LEGACY

1215/03

S18-1215-03

GEOLOGY – GL5

Thematic Unit 3
Geological Evolution of Britain

THURSDAY, 7 JUNE 2018 – MORNING

ONE of TWO units to be completed in 2 hours

	For Examiner's use only		
	Question	**Maximum Mark**	**Mark Awarded**
Section A	**1.**	**15**	
Section B	**2.**	**25**	
	3.		
	4.		
	Total	**40**	

1215
030001

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.

Examiner only

SECTION A

1. **Figure 1a** is a geological map of part of Pembrokeshire, southern Wales.

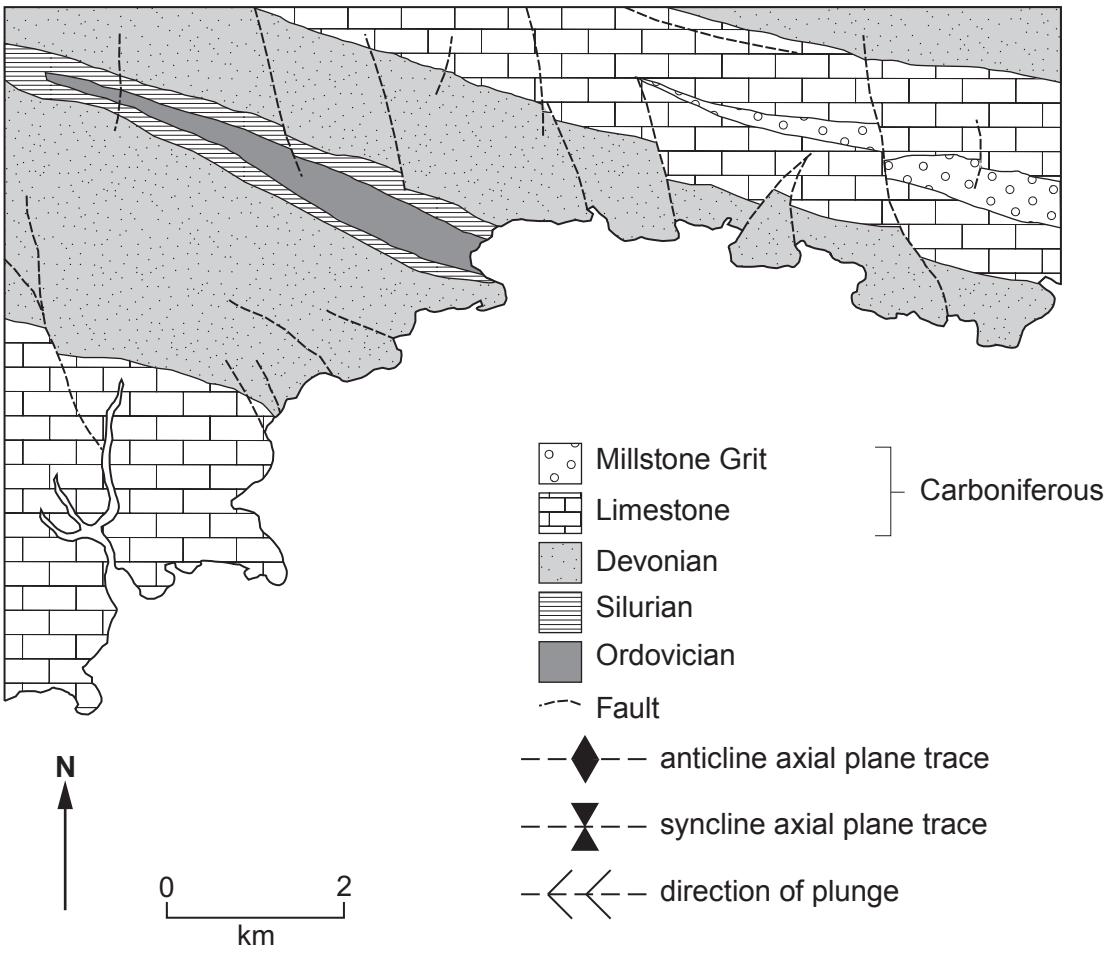

Figure 1a

(a) Refer to **Figure 1a**.

(i) Using the appropriate symbols from the key, mark on **Figure 1a**:

1. the axial plane trace **and** direction of plunge of **one** anticline
2. the axial plane trace **and** direction of plunge of **one** syncline. [4]

(ii) Name, with reasons, the most likely orogenic event which produced these folds. [3]

Orogenic event .....

Reasons .....

.....

.....

Examiner only

(b) **Figure 1b** is a sedimentary log from the Carboniferous Coal Measures exposed just to the north of **Figure 1a**. **Figure 1c** is a graph showing the changes in sea level interpreted from the sedimentary log in **Figure 1b**.

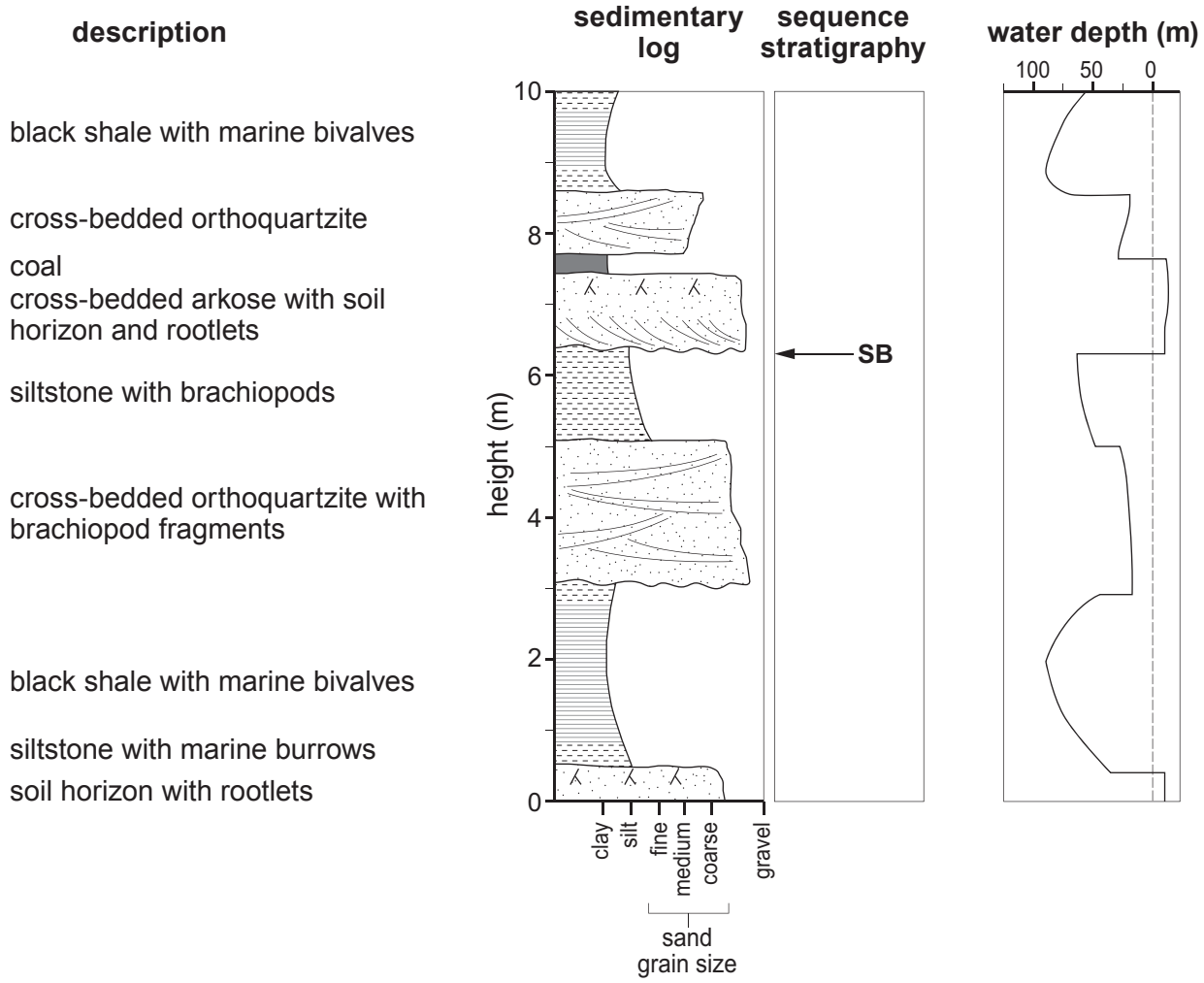

Figure 1b **Figure 1c**

(i) Describe the changes in sea level which occurred during the deposition of the lowermost 5 metres of the sedimentary sequence in **Figure 1c**. [2]

.....

.....

.....

(ii) Using your knowledge, describe **one** possible mechanism to explain the changes in sea level which you described in *(b)*(i). [2]

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.....

.....

Turn over.

Examiner only

(c) In stratigraphy three types of boundary are used to divide sedimentary deposits into 'sequences' based upon changes in sea level. **Table 1** describes these three boundaries.

boundary type	mode of formation
transgressive surface (**TS**)	formed by rapid sea level rise so that shallow marine sediments are deposited on top of eroded non-marine sediments
maximum flooding surface (**MFS**)	formed when sea level is highest
sequence boundary (**SB**)	formed by rapid sea level fall so that non-marine sediments are deposited on top of eroded marine sediments

Table 1

Refer to **Figure 1b**, **Figure 1c** and **Table 1**.

(i) Draw labelled arrows in the sequence stratigraphy column on **Figure 1b** to show the position of a maximum flooding surface (**MFS** →) and a transgressive surface (**TS** →). [2]

(ii) The position of a sequence boundary (**SB** →) is shown on **Figure 1b**. State the evidence from **Figure 1b** for locating a sequence boundary at this position. [2]

.....

.....

.....

15

SECTION B

Answer **one** *question only.*

Write your answer in the remaining pages of this booklet.

2. *(a)* Explain how evidence from fossils may be used to distinguish between different environments of deposition. Make reference to examples from the British geological record.

(b) Evaluate the reliability of this fossil evidence. [25]

3. *(a)* Describe the sedimentary and fossil evidence for significant climatic change associated with Britain drifting northwards across the Equator during the Late Palaeozoic.

(b) Evaluate the reliability of palaeomagnetic evidence for this change in latitude. [25]

4. *'The Caledonian orogeny has had a more significant effect than other orogenies on the geology of the British Isles.'*

Describe and evaluate the geological evidence which supports this statement. [25]

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Turn over.

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END OF PAPER

Acknowledgements

Figures 1b *and* **1c**: *Gareth George, 2008. The geology of South Wales; a field guide.*