



**GCE A level**

**1215/02**

**GEOLOGY – GL5**

**Thematic Unit 2**

**Geology of Natural Resources**

**P.M. FRIDAY, 10 June 2016**

**ONE of TWO units to be completed in 2 hours plus your additional time allowance**

**Surname** \_\_\_\_\_

**Other Names** \_\_\_\_\_

**Centre Number** \_\_\_\_\_

**Candidate Number** 2 \_\_\_\_\_

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

## **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 or your usual method.

Write your name, centre number and candidate number in the spaces on the front cover.

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.

**SECTION A**

**1. FIGURE 1a opposite shows the depth and temperature conditions under which oil and gas may form. FIGURES 1b and 1c opposite are cross sections through the Brent and Leman hydrocarbon fields in the North Sea showing the volume of accumulated hydrocarbons.**

**(a) Using FIGURE 1a, state the maximum depth at which oil formation takes place. [1]**

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**(b) Use FIGURES 1a and 1b.**

**(i) State the types of geological structures that form the hydrocarbon traps in the BRENT hydrocarbon field. [2]**

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**1(b) (ii) Explain how hydrocarbons have accumulated within the BRENT hydrocarbon field. [3]**

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**(iii) Some wells in the BRENT hydrocarbon field can extract only 33% of the oil whilst other wells can extract up to 56%. Suggest TWO GEOLOGICAL reasons for this variation. [2]**

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**1(c) (i) Using FIGURES 1a and 1b, suggest why oil and gas both occur in the BRENT hydrocarbon field. [2]**

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**(ii) Using FIGURE 1c ONLY, explain why no oil occurs in the LEMAN hydrocarbon field. [2]**

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**1(d) Using FIGURE 1c, critically evaluate the use of the Permian rocks in the LEMAN hydrocarbon field as a possible CO<sub>2</sub> repository for carbon sequestration. [3]**

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**SECTION B**

**Answer ONE question only.**

**Write your answer in the remaining pages of this booklet.**

**2. Evaluate the use of:**

**(a) geophysical surveying**

**(b) geochemical prospecting techniques**

**in prospecting for METALLIFEROUS mineral resources. [25]**

**3. Evaluate the importance of:**

**(a) igneous processes**

**(b) sedimentary processes**

**in the formation of METALLIFEROUS ores. [25]**

**4. “Interference with the surface and/or subsurface environment from the extraction of geological raw materials can be minimised by planning.”**

**Evaluate this statement with reference to the ways in which any adverse effects can be limited. [25]**

























**ACKNOWLEDGEMENTS**

**Woodcock, N (1994) Geology and  
Environment in Britain and Ireland.  
CRC Press**

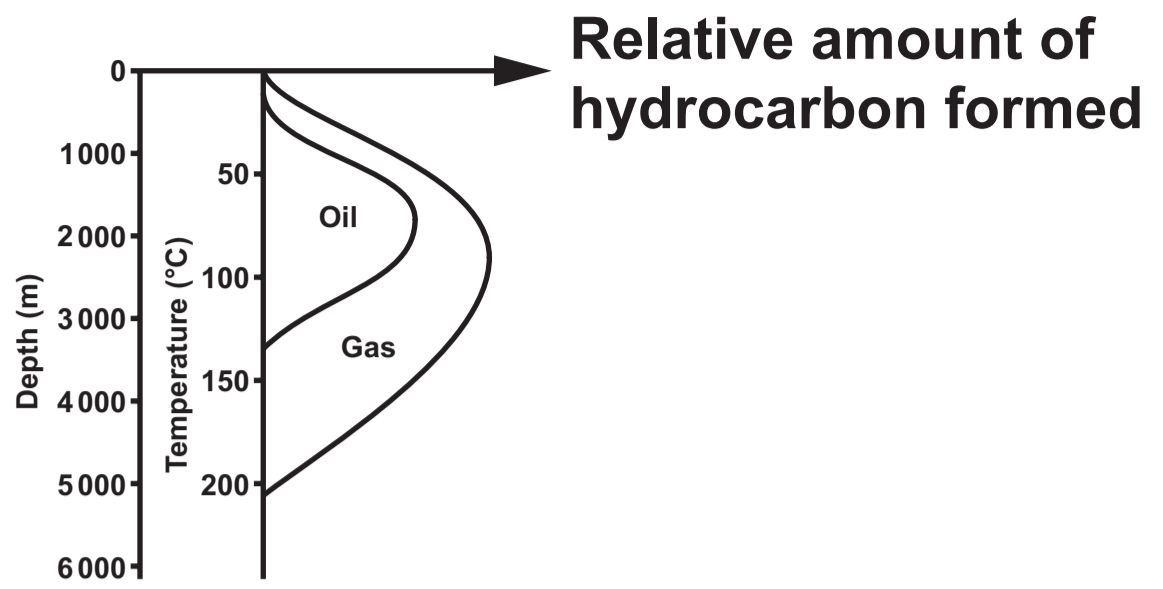


FIGURE 1a

Brent hydrocarbon field

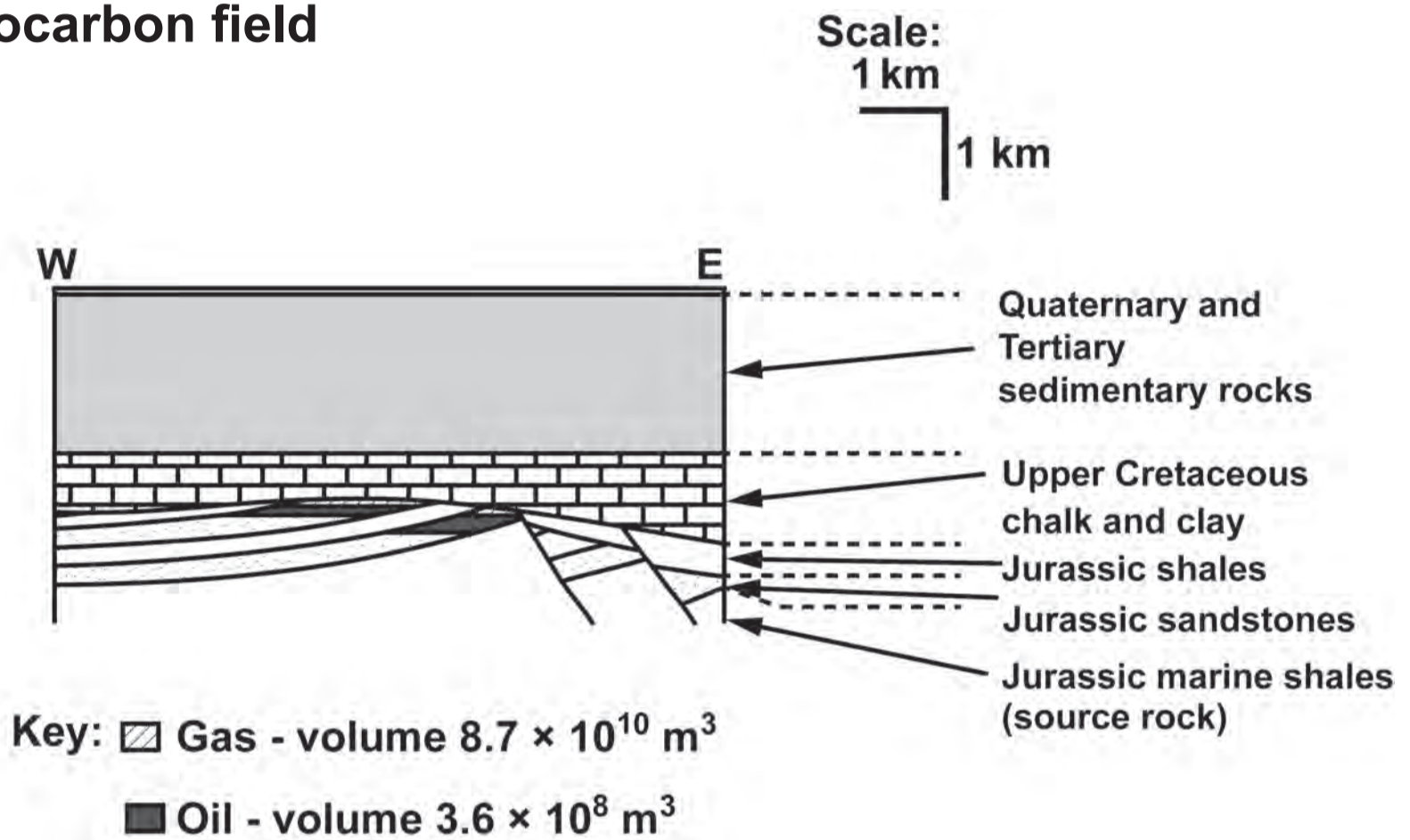


FIGURE 1b

Leman hydrocarbon field

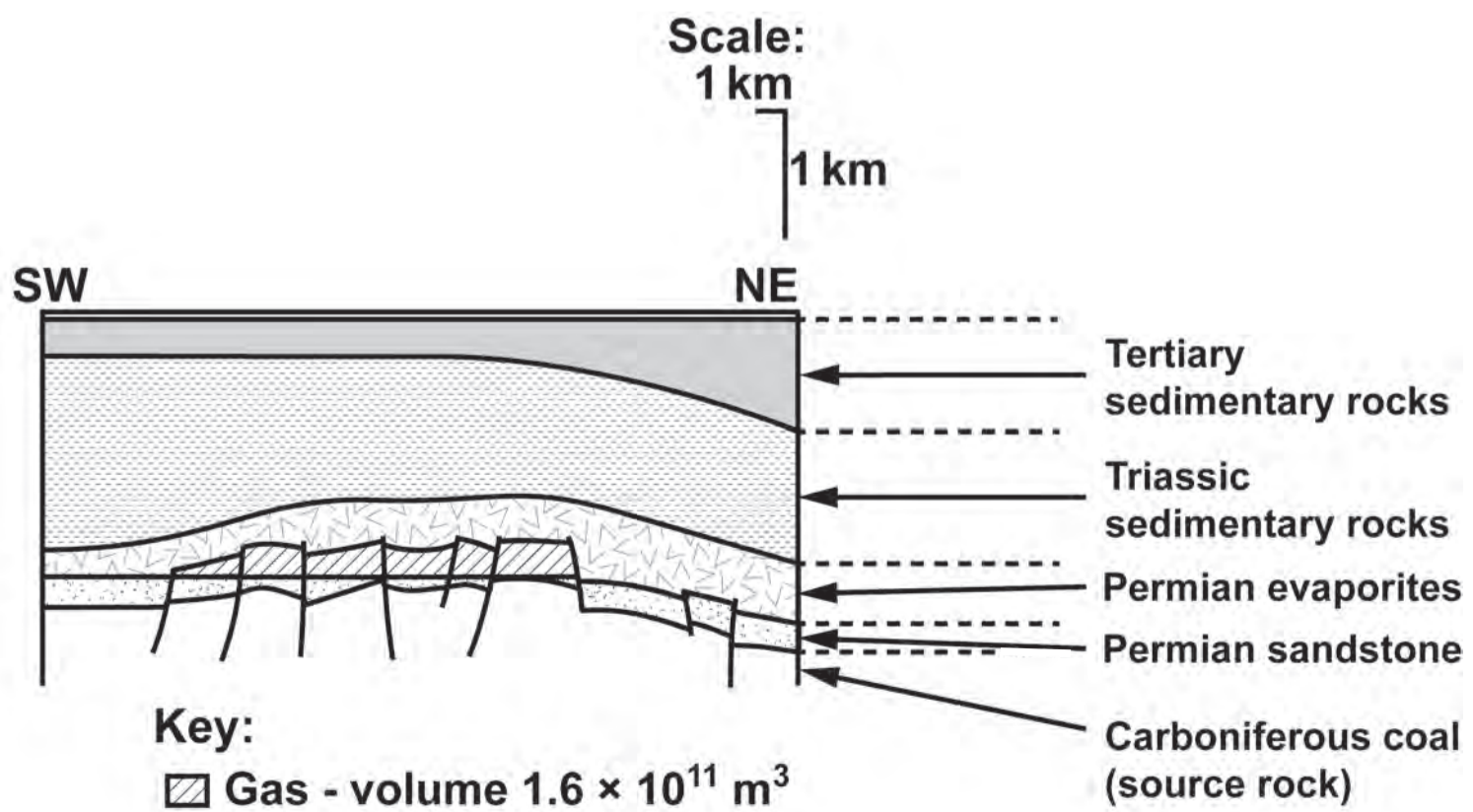


FIGURE 1c