

Surname	Centre Number	Candidate Number
Other Names		2



**GCE A level**

1215/02

**GEOLOGY – GL5**

**Thematic Unit 2**

**Geology of Natural Resources**

P.M. TUESDAY, 10 June 2014

ONE of TWO units to be completed in 2 hours

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

1215  
020001

## 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.

## SECTION A

1. **Figure 1a** shows the ranks of coal with a representative price per tonne.

**Figure 1b** shows the change in proportion of elements in the different ranks of coal.

**Figure 1c** shows the change in calorific (energy) value and volatiles (liquids and gases) in the different ranks of coal.

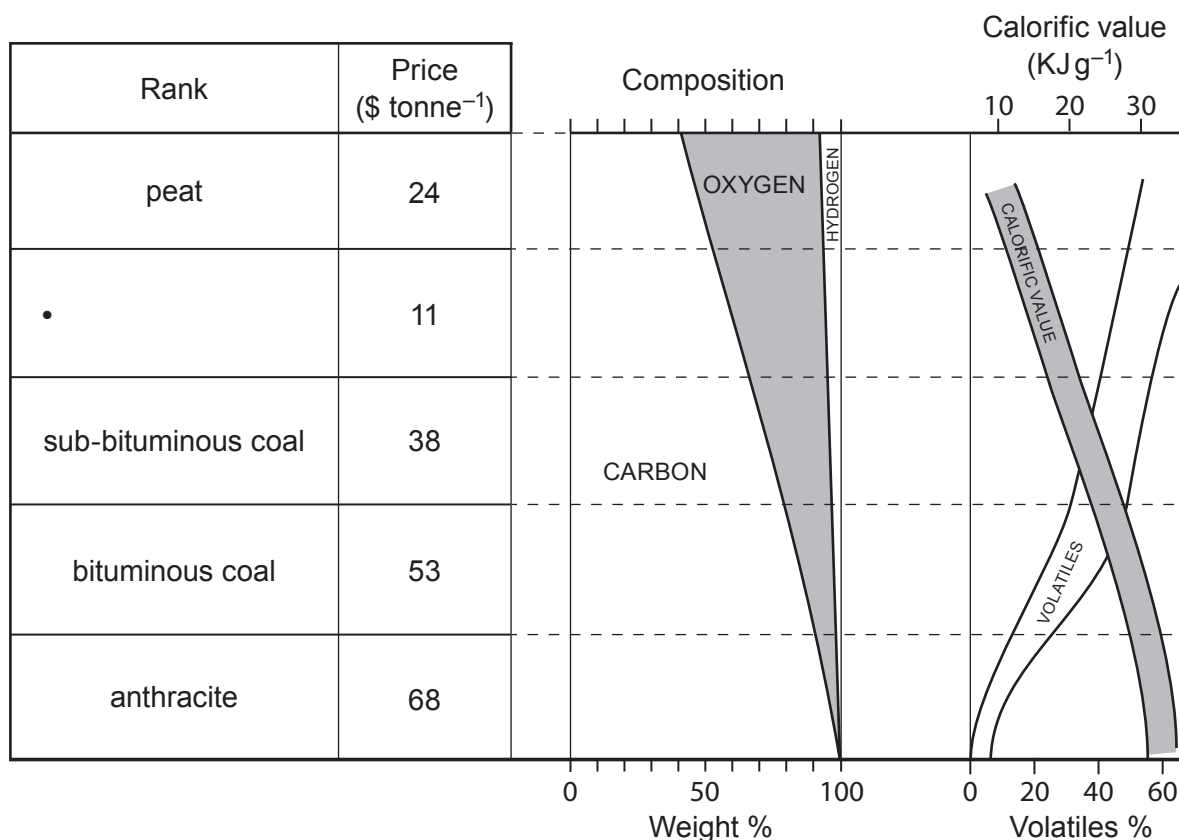


Figure 1a

Figure 1b

Figure 1c

(a) Complete **Figure 1a** by inserting the name of the missing coal rank. [1]

(b) (i) Using **Figure 1b** describe the changes in the composition of coal with increasing rank. [2]

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(ii) Describe the relationship between the price and the rank of coal in **Figure 1a**. [2]

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- (iii) With reference to **Figures 1a, 1b** and **1c**. Give reasons for the relationship between price and rank of coal. [3]

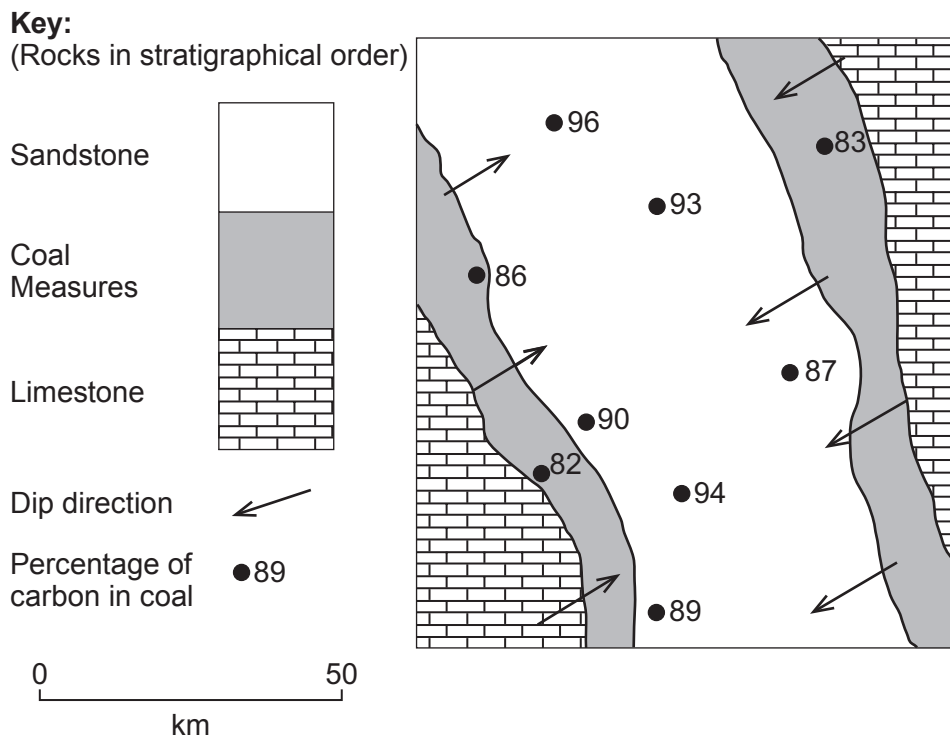
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- (c) **Figure 1d** is a geological map showing the outcrop of a coalfield. The carbon content of the coal (% carbon), taken from a drilling survey, is shown.



**Figure 1d**

Refer to **Figures 1a, 1b** and **1d**.

- (i) Describe the pattern of changing rank of coal within the coalfield in **Figure 1d**. [1]

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- (ii) Suggest possible reasons for the distribution of coals of different ranks within the coalfield in **Figure 1d**. [2]

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- (d) (i) State **one** way in which the extraction of the coal, or another named geological raw material, could interfere with the surface or subsurface environment. [1]

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- (ii) With reference to your answer for (d)(i), explain how the adverse effects of this **one** environmental interference could be minimised. [3]

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**SECTION B**

*Answer **one** question only.*

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

2. (a) Describe the origin of hydrocarbons (oil and natural gas).  
  
(b) Evaluate the role of porosity and permeability in the distribution, migration and accumulation of hydrocarbons (oil and natural gas). [25]
3. Describe and evaluate the importance of igneous processes in the formation of metalliferous ores of economic importance. [25]
4. Evaluate the importance of geophysical techniques in prospecting for mineral and energy resources. [25]











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