

**ADVANCED GCE
GEOLOGY**

Geological Skills

TUESDAY 19 JUNE 2007

2836/01

Afternoon

Time: 1 hour 15 minutes

Additional materials: Insert
Protractor
Ruler (cm/mm)



* GCE / T18206 *

Candidate
Name

Centre
Number

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Candidate
Number

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INSTRUCTIONS TO CANDIDATES

- Write your name, Centre Number and Candidate Number in the boxes above.
- Answer **all** the questions.
- Use blue or black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Do **not** write in the bar code.
- Do **not** write outside the box bordering each page.
- **WRITE YOUR ANSWER TO EACH QUESTION IN THE SPACE PROVIDED. ANSWERS WRITTEN ELSEWHERE WILL NOT BE MARKED.**

INFORMATION FOR CANDIDATES

- The number of marks for each question is given in brackets [] at the end of each question or part question.
- You will be awarded marks for the quality of written communication where this is indicated in the question.

FOR EXAMINER'S USE		
Qu.	Max.	Mark
1	17	
2	16	
3	4	
4	9	
5	14	
TOTAL	60	

This document consists of **12** printed pages and an insert.

(b) Fig. 1, on the insert provided, shows feature **A** at the base of a greywacke bed.

(i) Name the feature.

..... [1]

(ii) Explain how feature **A** formed.

.....
.....
..... [2]

(iii) The mineral vein at the top left of the photograph contains a white mineral that could be quartz or calcite. Describe **two** methods to correctly identify the mineral in the field.

1.....
.....
2..... [2]

(c) Fig. 2, on the insert provided, shows feature **B** at the base of a greywacke bed.

(i) Name the feature.

..... [1]

(ii) Describe with the aid of a diagram how feature **B** forms. Draw an arrow on your diagram to show the direction of the current.

.....
..... [3]

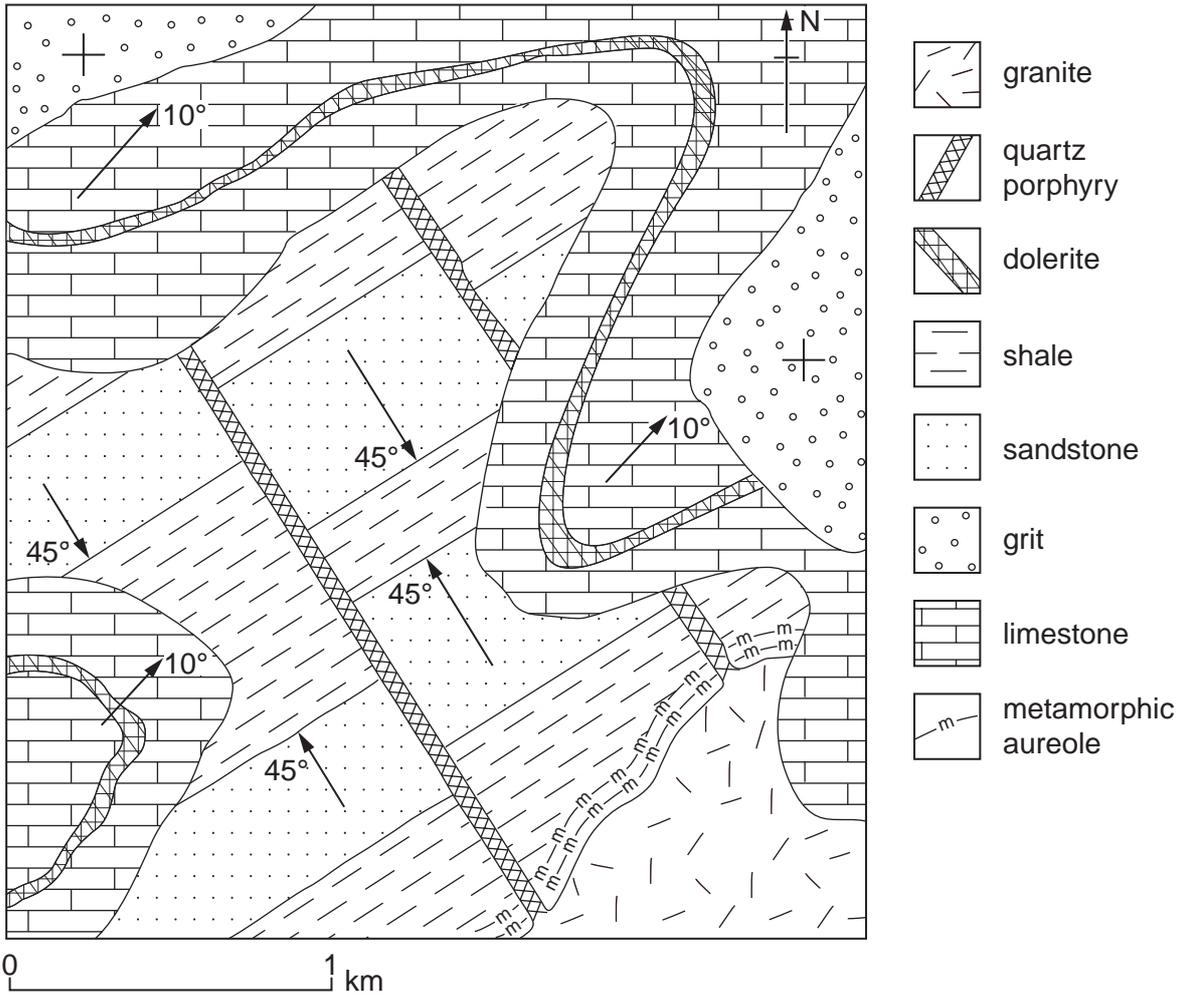
(d) Name the environment in which the sequence of interbedded shales and greywackes was laid down.

..... [1]

[Total: 17]

[Turn over

2 The geological map below shows an area after erosion.



(a) Describe the fold structure in the centre of the map using technical terms and directions.

.....

.....

.....

.....[2]

(c) Specimens of dolerite, quartz porphyry and granite were collected from the area shown on the map.

(i) Describe **one** difference between a dolerite and a quartz porphyry that can be seen in hand specimens.

.....
..... [1]

(ii) Give **one** similarity and **one** difference between a granite and a quartz porphyry.

similarity

.....

difference

..... [2]

(iii) Name **and** describe the rocks that would be found inside the metamorphic aureole around the granite, shown on the map.

.....

.....

.....

..... [2]

[Total: 16]

3 Fig. 3, on the insert provided, shows several structural features on part of a cliff face.

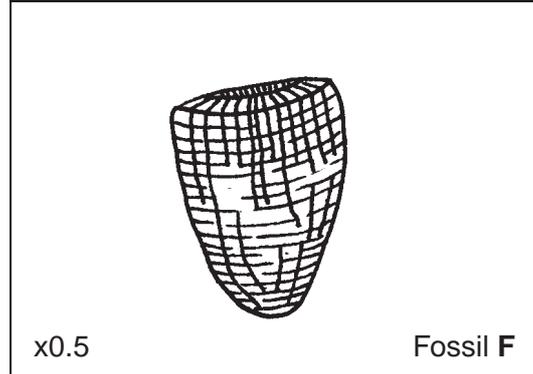
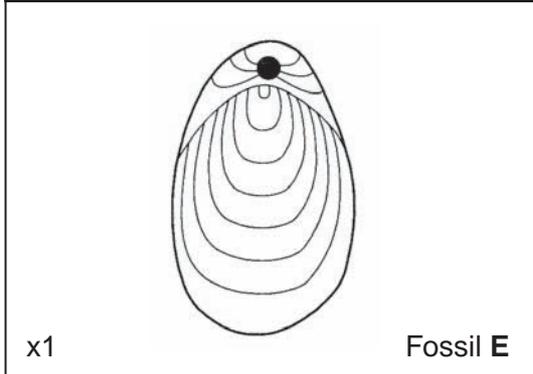
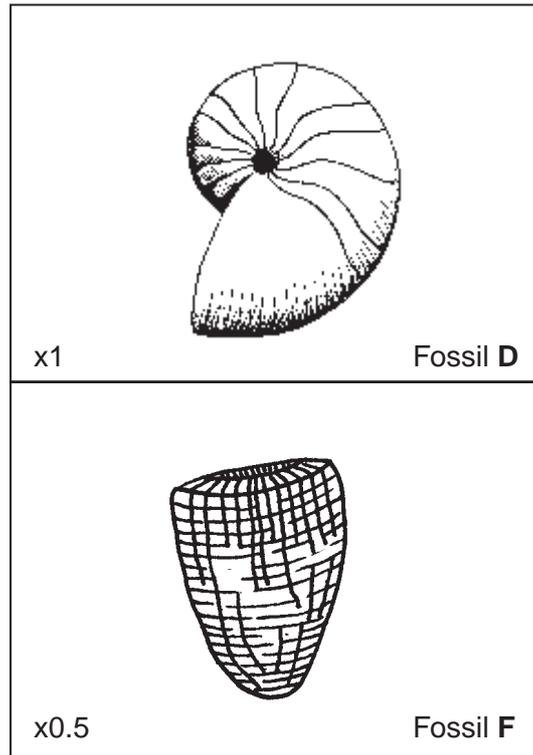
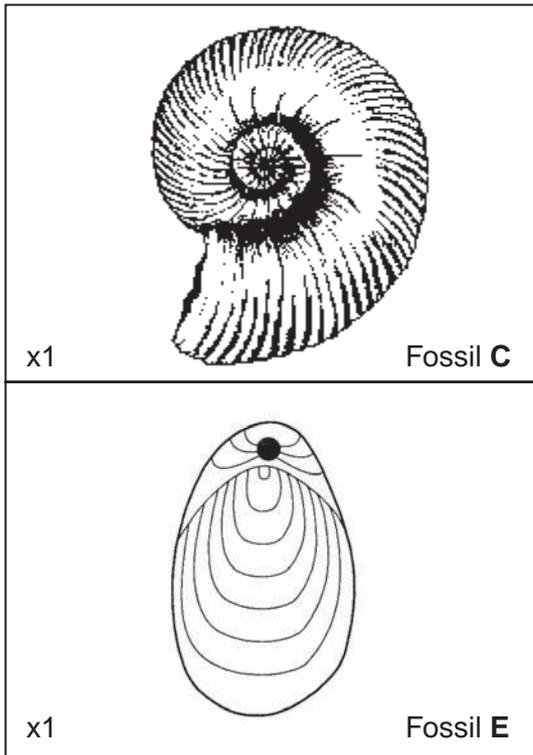
Draw a **fully labelled** sketch with appropriate measurements to show the structural features shown on the photograph.



[4]

[Total: 4]

4 A fossil assemblage found in Jurassic rocks contains fossils **C**, **D**, **E** and **F**.



(a) (i) Identify the scleractinian coral.

.....

[1]

(ii) Which fossil has a foramen?

.....

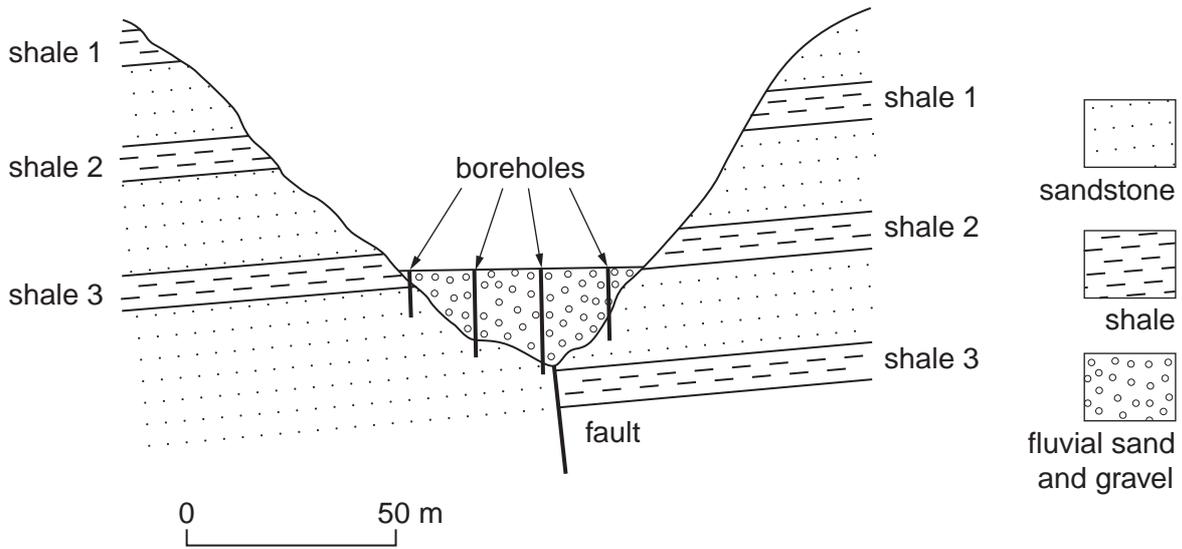
[1]

(iii) Which fossil is involute?

.....

[1]

5 A possible site for a dam has been investigated using surface mapping and drilling boreholes. The geological interpretation of the site is shown on the cross section below.



(a) Name **and** describe the method that could be used to correlate the shales which contain no fossils.

.....

.....

..... [2]

(b) (i) Describe **three** problems that would be encountered if a dam were built at this site.

1.

.....

2.

.....

3.

..... [3]

(ii) Explain why boreholes give incomplete data compared to a geophysical survey.

.....

..... [1]

(c) Rocks **G**, **H** and **I** are clasts collected from the fluvial sand and gravel deposit. Identify the three rocks.

rock	description	rock name
G	black colour fine grained crystalline igneous silica content 49%	
H	grey in colour crystalline composed entirely of quartz	
I	silvery colour with black, red and white crystals medium grained crystals crystals aligned with muscovite mica distorted around garnet	

[3]

(d) (i) Some of the pebbles in the fluvial deposit are found in layers as shown below.

Identify the sedimentary structure.



..... [1]

(ii) Explain how this structure forms.

.....

 [2]

(e) A masonry dam is to be constructed. Suggest a suitable building stone to be used on the dam wall. Explain why the rock you have chosen will be suitable.

.....

 [2]

[Total: 14]

END OF QUESTION PAPER

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