



ADVANCED GCE
GEOLOGY
 Palaeontology

2834

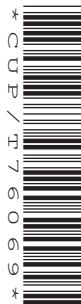
Candidates answer on the question paper

OCR Supplied Materials:
 None

Other Materials Required:
 • Ruler (cm/mm)

Tuesday 20 January 2009
Afternoon

Duration: 1 hour 30 minutes



Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do **not** write in the bar codes.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **90**.
- You will be awarded marks for the quality of written communication where this is indicated in the question.
- This document consists of **12** pages. Any blank pages are indicated.

FOR EXAMINER'S USE

Qu.	Max.	Mark
1	20	
2	17	
3	13	
4	15	
5	25	
TOTAL	90	

Answer **all** the questions.

- 1 (a) (i) A number of fossil molluscs are described in the table below. Complete the table.

fossil	description	fossil group
A	has a guard and a phragmocone	
B	has an unchambered, helically coiled shell and a large aperture	
C	has two valves which are symmetrical along the hinge line	
D	has a coiled chambered shell, interconnected by a siphuncle and has heavy ribbing	

[4]

- (ii) In the space below, draw labelled diagram(s) to show the main features of fossil **D**.

[3]

- (iii) Describe the **mode of life** of fossil **A**.

.....

.....

.....

..... [2]

- (b) (i) Fossil **D** can be found as pyritised specimens. Describe and explain how pyritisation occurs.

.....

.....

.....

.....

.....

..... [3]

- (ii) Describe **two** factors that allow exceptional preservation to occur in **amber**.

1

.....

2

..... [2]

- (iii) State **one** other type of exceptional preservation.

..... [1]

- (c) (i) Define the term *trace fossil*.

.....

.....

.....

..... [2]

- (ii) Explain how trace fossils can give us information about the environment.

.....

.....

.....

..... [2]

- (iii) Give **one** example of a trace fossil.

..... [1]

[Total: 20]

Turn over

2 This question is about crinoids and echinoids.

- (a) (i) The table below shows features that may be found in either **crinoids** or **regular echinoids**, or **both**.

Complete the table by circling the correct option in each case. Circle only **one** answer. The first one has been done for you.

features	options		
has a test composed of calcite plates	crinoids	echinoids	both
has five fold radial symmetry	crinoids	echinoids	both
has spines for defence and movement	crinoids	echinoids	both
has an anal tube	crinoids	echinoids	both
has ossicles and a holdfast	crinoids	echinoids	both
has tube feet	crinoids	echinoids	both

[5]

- (ii) Explain the function of the following features found in some echinoids.

tubercle

.....

.....

.....

pore pairs

.....

.....

..... [4]

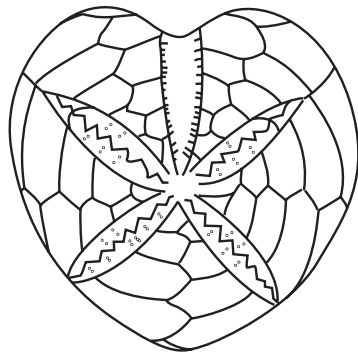
- (iii) Complete the table to describe the mode of life of crinoids and echinoids. Select your answer from the terms provided.

	planktonic	vagrant	sessile	nektonic
mode of life				
crinoid				
echinoid				

[2]

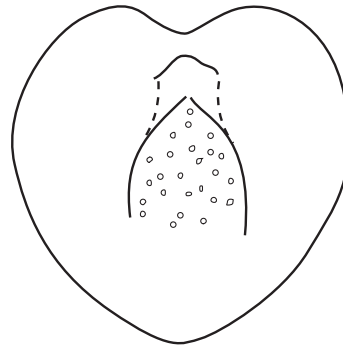
(b) Fossil **E** is a species of *Micraster*. The diagram below shows two different views of this fossil.

fossil E



X 1

aboral view



X 1

oral view

(i) Label on the correct diagram above, the following morphological features:

- petaloid ambulacra
- labrum.

[2]

(ii) Describe and explain **two** morphological changes that occurred as *Micraster* evolved in the Cretaceous.

1

.....

.....

.....

2

.....

.....

..... [4]

[Total: 17]

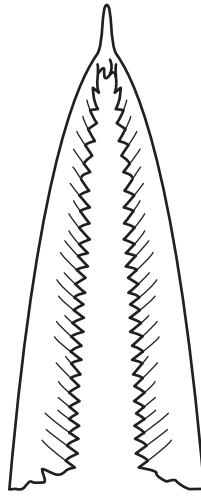
- 3 Fossils **F**, **G** and **H** are members of the same fossil group, but are found in different horizons from rocks of the Palaeozoic era.

fossil F



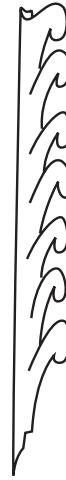
X 2

fossil G



X 2

fossil H



X 4

- (a) (i) To which fossil group do fossils **F**, **G** and **H** belong?

..... [1]

- (ii) What substance are the skeletons of fossils **F**, **G** and **H** composed of?

..... [1]

- (iii) Label the following morphological features on the diagram of fossil **F** above:

- nema
- stipe
- theca.

[3]

- (iv) Describe the form of fossil **G** above. Circle the correct answer.

scandent

pendant

reclined

[1]

- (v) Which fossil (**F**, **G** or **H**) is biserial?

fossil

[1]

- (vi) Place fossils **F**, **G**, and **H** in evolutionary order.

youngest

.....

.....

oldest

.....

[2]

- (b) (i) Describe the likely mode of life of these fossils.

.....

.....

.....

.....

.....

..... [3]

- (ii) Name **one** other fossil that may have lived in the same environment during the Palaeozoic.

..... [1]

[Total: 13]

- 4 (a) (i) Explain how the relative ages of rocks can be determined using the following methods. Use diagrams to illustrate your answers.

way up structures

.....

.....

.....

..... [3]

cross cutting relationships

.....

.....

.....

..... [3]

- (ii) Name **one** other way of dating rocks using relative methods.

..... [1]

- (b) (i) What is a **derived** fossil?

.....

.....

.....

..... [2]

- (ii) Describe **one** problem derived fossils can cause when dating rocks.

.....

..... [1]

- (c) (i) Give an example of a Jurassic zone fossil and describe how it is used.

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

- (ii) Give **three** characteristics that are required of a good zone fossil.

1
.....
2
.....
3
..... [3]

[Total: 15]

5 In this question, two marks are available for the quality of written communication.

(a) Describe the morphology of rugose corals and the conditions needed for good coral growth. Diagrams are essential to illustrate your answer.

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[illegible]

[Total: 25]

