OCR
RECOGNISING ACHIEVEMENT

GCE

Geology

Advanced GCE **A2 7884**

Advanced Subsidiary GCE **AS 3884**

Report on the Units

January 2008

3884/7884/MS/R/08J

Oxford Cambridge and RSA Examinations

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REPORT ON THE UNITS

Chief Examiner's Report

General Comments

Some very good scripts were seen from candidates who showed a comprehensive understanding of the subject material and many expressed their knowledge and ideas clearly and concisely. The examinations this session performed well with no problems and a wide range of marks on all the units. There were no questions that did not have full marks from some candidates. The performance of candidates was good on all units with examples of excellent work. On all papers there were quite a few high scoring scripts that displayed very sophisticated understanding of the topics in the OCR specification.

The AS units taken in January have a mix of AS candidates taking the unit for the first time with a very small number of resit candidates. The only A2 unit - Palaeontology - is being taken for the first time by virtually all the candidates. It is noticeable that the January marks are very high each year with a few candidates gaining nearly full marks. The quality of these A2 papers is very good and candidates' knowledge of the specification and the technical terms is often excellent.

The correct use of the technical terms given in the specification is always essential and correct spelling of these terms should be strongly encouraged. Where a term such as *lithosphere* is used in the question but then spelt incorrectly in the answer, it again suggests that candidates do not always read the question carefully. There are a number of similar terms commonly used where poor spelling and / or handwriting can mean that it is not clear to the examiner which term is being used.

The command word *explain* is too often ignored and answers are purely descriptive. General descriptions regularly cause candidates to gain lower marks. Any 'explain' question requires candidates to give a reason or to say why in order to gain the marks. Some candidates struggle with higher demand questions that ask for explanations, interpretations or comparisons and resort to writing lists which fail to show their knowledge and understanding of the subject matter.

A problem for some candidates was reading the question carefully so that the answers matched the data required. Particularly in 2832 there were a few part questions where candidates did not use the data provided in the question. Specifically it is the descriptive stem of a question that usually sets the scene for the question and gives vital information which is being ignored. In one case the question states that the diagrams are of clastic rocks but the answers given included igneous and metamorphic.

Many candidates are now performing better on the topics and skills which have proved a problem in the past - including structural geology. In order for diagrams or sketches to be given credit, they must be clear, with the features to be labelled clearly identifiable. This is true for all papers.

A growing concern is the lack of understanding of scales used on all maps and diagrams but especially thin section drawings. A conglomerate and a sandstone can look identical unless the scale is considered. A variety of scales are used from bar scales to x1 or x2. The confusion for a minority of candidates is increased by their not appreciating the correct units especially mm and cm. Teaching the use of scales and how to interpret them could be a useful topic for all the units.

2831 Global Tectonics and Geological Structures (Written Examination)

General Comments

It was pleasing to see that all candidates were able to demonstrate their knowledge by achieving some marks on this paper. Candidates were able to score in all areas of the specification and there were no questions or part questions that failed to elicit correct responses from some candidates. Overall the examination paper discriminated well enabling the best candidates to achieve high scores. However, it was noted that few candidates scored highly all the way through the paper – even better candidates appeared to have areas that they had not thoroughly revised and therefore scored fewer marks than in other questions. The overall quality of the papers this year was good. The overall paper marks ranged from 5 to 56 out of the maximum 60 marks with a good spread between the two.

There was no obvious problem with candidates running out of time. Candidates tended to do well in the extended prose question on earthquake prediction with even weak candidates gaining over half marks. Unusually, the structural question was well done by the majority of candidates indicating a general improvement in this topic. Candidates did though lack knowledge on the distribution of tectonic features and were unable to describe them in detail. Palaeomagnetism also caused problems for many candidates who clearly did not understand this topic.

Comments on Individual Questions

1 Many candidates lacked detailed knowledge of trenches, mountain ranges and cratons and were unsure where many tectonic features are located. The specification requires characteristics as well as how these tectonic features are linked to seismicity and plate boundaries.

Teaching Tip

It is worth giving candidates a blank map of the world as a homework or class activity. Ask the candidates to mark on (in different colours with a key) all the major tectonic features listed in the specification: trenches, mountain ranges, cratons, shallow, intermediate and deep focus earthquakes, volcanoes, abyssal plains, hot spots.

However the alternative way round of presentations of maps and characteristics showing where these features are found helps the visual learners. Card sorts of features and characteristics also work well to ensure that candidates create links between the features, the characteristics and the plate boundaries.

(a) Marking the location of the tectonic features was a problem for a number of candidates and trenches on land was one of the impossible answers given. For others simply labelling a point was done rather than shading the features as instructed in the question.

(b) The main problem was that candidates described the formation of the feature rather than described the geological characteristics. The mark scheme has a wide range of possible responses which would be a useful teaching resource.
Good responses referred to a range of characteristics including gravity and heat flow anomalies.

Candidates' knowledge and understanding of cratons has improved with many using terms such as *aseismic.* However vague terms such as *cratons* are old and not detailed enough, and the age as Precambrian or >1000Ma is needed.

(c) **(i)** Many candidates knew that the core was the source of heat but not many knew that this was generated by radioactivity or heat left over from the formation of the Earth. Some candidates knew that heat could be generated from the slowing down of earth rotation and crystallisation of the Inner Core.

(ii) Candidates have a good understanding of the location of plate margins in this type of cross section with many excellent answers. However candidates are still unclear about knowing exactly where the lithosphere and asthenosphere are within such a cross-section.

Teaching Tip

Lithosphere contains the crust and part of the solid upper mantle. Lithosphere extends to about 100 km depth on average but continental lithosphere can be up to 150 km. All plates are made of the lithosphere.

The asthenosphere is immediately below the lithosphere and can extend to between 200 and 400 km depth. This is the partially melted layer on which the lithosphere plates move.

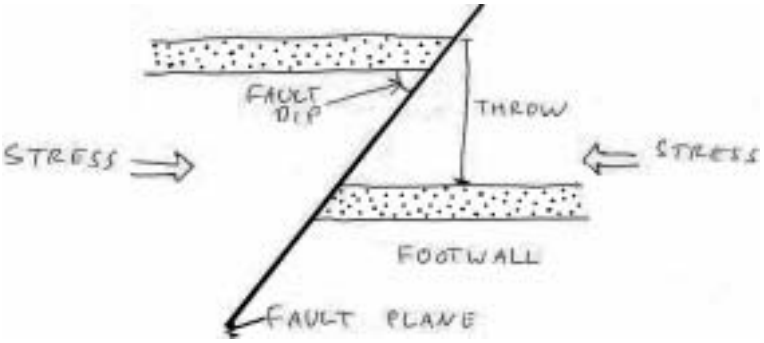
(iii) Many knew about the convection cells rising at the MOR, diverging and then converging and sinking at the subduction zone. However, a significant number of candidates are unclear, with many drawing numerous small convection cells.

Teaching Tip

All candidates should be familiar with a detailed cross-section of constructive and destructive plate margins. Candidates should draw a detailed cross-section of each plate margin sheet with all possible labelled features and processes included.

2 Candidates did very well on this question considering that it is a structural question which candidates often struggle with.

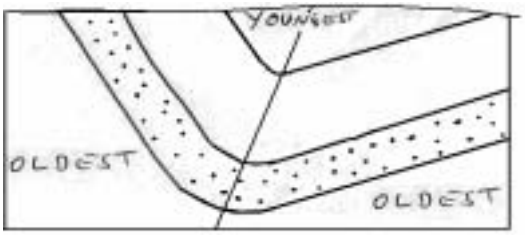
(a) **(i)** It was impressive how many candidates were able to draw and label the correct type of fault. Candidates should keep the cross-section simple and not try 3D diagrams. The example below shows all that is essential to gain full marks.



Most candidates labelled the fault plane and footwall correctly. The throw which requires a clear vertical displacement was the least well-answered. It is important that candidates know that the angle of fault dip is measured from the horizontal and not from the vertical.

(ii) The vast majority of candidates drew the correct stress directions with compressive forces.

(b) **(i)** Most candidates drew an asymmetric synform correctly, though some drew an overfold with parallel limbs which could not get full credit. Keeping the drawing simple with two limbs at clearly different angles of dip is the easiest way to gain the marks.



(ii) Many candidates had the right idea about a syncline with the youngest rocks in the core of the fold and the oldest rocks on either side.

(c) **(i)** Only the stronger candidates were able to recognise and name the type of fault as a tear fault. Candidates should be familiar with looking at faults in plan / map view as well as in cross-section and be able to recognise the faults accordingly. The introduction to the question states that this is a map and not a cross section.

(ii) The vast majority of candidates could draw on the map the correct relative movement of the faults. This is shown by the displacement of the igneous intrusions.

(iii) Fault structures remain an area of weakness for some candidates, with only the best gaining a mark. Yet if the question had given fault breccia or slickensides in the question it is likely that candidates would have made the link.

(d) **(i)** Many candidates could mark cleavage planes correctly in the shale beds.

(ii) There were some good answers on slaty cleavage, referring to alignment of cleavage planes at 90° to the direction of compression or parallel to the axial plane. A few candidates used simple diagrams which helped clarify the answers. Candidates may use diagrams if they help with an explanation even if it is not asked for explicitly. Encourage candidates to use the term *incompetent* when discussing cleavage.

(iii) Many candidates could mark on joints in the sandstone correctly with most drawing them around the hinge. However, a few had them in the shale.

(iv) Not well answered by most candidates with little reference to tension or where on the fold this was greatest. Candidates need to be clear that it is tension at the crest/hinge that causes the joints. Encourage candidates to use the term *competent* when discussing the formation of joints.

3 Parts of this question proved difficult especially the part on palaeomagnetism which is often the case.

(a) **(i)** Palaeomagnetism and particularly the use of polar wandering curves proved a difficult topic for candidates. Candidates need to be clear that there is a difference between palaeomagnetism in the magnetic reversals, used as evidence of sea floor spreading and palaeomagnetism as a result of magnetic inclination which is determined by latitude. The best candidates related inclination to latitude and gave an example, e.g. horizontal at the equator which they interpreted from the diagram. They showed how inclination would be different if the latitude changed.

Candidates need to be familiar with magnetic inclination linked to palaeolatitude and then the link to polar wandering curves. At its simplest: when the polar wandering curves of two continents coincide then they were close together at similar latitudes and when the curves diverge the continents separated.

(ii) The majority of candidates were able to link the origin of magnetism to convection in the liquid and iron rich outer core.

(b) **(i)** Most candidates gained at least one mark by writing about the poles reversing. Candidates should be encouraged to add detail to explanations of how the anomalies form by cooling of magmas below the Curie point allowing iron rich minerals to align and be stored.

(ii) Most candidates knew an appropriate rock that formed at mid-ocean ridges. An answer of *pillow lavas* on its own is too vague – it should be *basalt(ic)* pillow lavas.

(c) Unfortunately a number of candidates named the meteorites rather than stating the composition. This made it difficult for them to gain more than half marks for this question.

(d) **(i)** Direct evidence for the composition of the continental crust was surprisingly poorly answered though many candidates did describe xenoliths and seismic waves. Candidates should be aware of the use of direct geological mapping, sampling, mining and drilling to determine composition below the surface.

(ii) *Ophiolites* were not fully understood by many candidates, with some not attempting the question and others guessing.

(iii) Many candidates knew the structure of the oceanic crust in detail often adding well labelled diagrams. A significant minority of candidates described the basic composition, thickness and density and misunderstood the *structure* requirement of the question which required the order of the layers.

(iv) Most candidates knew the thickness of oceanic crust although many did not realise that an average should be a single figure not a range.

4 This proved to be very well done by most candidates with none leaving it blank which is unusual. Most candidates gained over half marks with many full marks.

Most candidates knew three (or more) methods and the difference between the strong and weak candidates was the amount of detail that was added. Answers by strong candidates gave:

- the name of the technique
- an explanation of the technique
- drew a diagram if appropriate
- gave examples of its use
- indicated the limitations

These ideas should be applied to each of the methods studied.

QWC Generally very good this session, helped by the high quality answers. Most candidates knew the technical terms and structured their answers in a clear fashion.

2832 The Rock Cycle - Processes and Products (Written Examination)

General Comments

This examination paper gave a wide range of results. Marks ranged from 1 to 58 out of the maximum 60 marks. In a reversal of the usual trend, the two questions that included metamorphism produced higher marks than the question that included sedimentary processes. A significant number of candidates were unable to identify sedimentary rocks from thin section diagrams but did know how rock type and mineral composition were affected by different types of metamorphism. There was no evidence that the paper could not be completed in the time allowed.

Comments on Individual Questions

Question 1
This question was found to be the most challenging. The full range of marks was awarded with candidates on average gaining 7 or 8 marks.

1 (a) (i) Many candidates gained both marks for this question.

(ii) Most gained one mark of the two marks for this question. They knew the correct vertical sequence but *topset, foreset* and *bottomset* were just written in the right general sequence for top to bottom and not labelled to make it clear where one ended and other began. A few candidates confused *foreset* with *forest* and put them above sea level.

(b) (i) A mark was sometimes lost because one of the rock names was missed out of the table. Both coal and seat earth should have been entered in the topset section of the table because it is the correct environment for both of them. There were some wild guesses too.

(ii) The majority of candidates knew that *cyclothem* was the right answer though a minority opted for *graded bedding*.

(iii) Better candidates could clearly explain how the sequence forms. Some knew that the delta built out into the sea but did not communicate any idea of sea level change resulting in a repeated sequence. There were candidates who could not offer proper explanations. Candidates who gave *graded bedding* as their answer in part (ii) were allowed credit for a correct explanation of how it forms, so that they were not penalised twice.

(iv) This was generally answered correctly. Sometimes the environmental conditions were described using terms such as *anaerobic*, *swampy* or even *damp and cold* without mentioning a climatic zone. *Equatorial* or *tropical* was sufficient to gain the mark.

Teaching Tip

Provide containers of materials for making bottomset (clay), foreset (sand) and topset (bark and leaves) layers in a coal measures delta. Each container has a label describing the environment of deposition. Clay = deep water, low energy, little or no current. Sand = shallower water, higher energy, medium speed currents. Bark and leaves = land, remains of trees. Place the materials into a beaker to form the layers of a delta, beginning with the clay and make a note of the depositional environment each time a layer is added. After the layer of plant material, which represents coal, the sequence begins again with clay as the next layer. The beaker now contains two cyclothems.

The question is: how did the environment change from being land with trees to deep water? The answer will involve ideas like subsidence and the sea moving in over the land. Ideas about emergence and marine regression are likely to be suggested to explain how the next layer of sand and the final layer of bark and leaves are deposited.

(c) **(i)** This proved to be surprisingly difficult. Quite a number of candidates named rocks that were not sedimentary. The question told them that the rocks were *clastic* and that they were *deposited* but this information was not used by some candidates. Rocks suggested included igneous, granite, metamorphic and schist. Sometimes the scale bars were ignored and A was identified as conglomerate and C as sandstone. Shale was not the right answer to B because there is no alignment of clay minerals in the diagram.

(ii) Again there were many who did not read the question carefully enough. It stated that the conditions in which the rocks were deposited were *marine*, but river and desert environments were quite often described in answers. If candidates named the wrong sedimentary rock in (i) they could still gain credit for describing its environment of deposition so that they were not penalised twice. They were asked to give a description, not just one or two word answers. Very brief answers that were not a description were credited as a list and gained one mark overall.

Teaching Tip

Rock Art
Use the thin section diagrams from past exam papers and enlarge them using a photocopier so that they can be mounted and displayed. The task is to produce a catalogue for visitors to your gallery. Each work of art should have the name of the rock and a scale bar. The catalogue gives the environment of deposition or origin for each rock.

Question 2
Candidates performed well overall on this question.

2 **(a)** This question discriminated quite well. A few candidates used letters more than once or used all the letters when not all were appropriate.

(b) **(i)** Batholiths were capably described with most candidates able to refer to scale, composition, crystal size and discordance.

(ii) Many candidates knew about two stage cooling but not all knew that the slow cooling produced large crystals and the rapid cooling the fine grained groundmass. Sometimes this was reversed. A significant minority confused *porphyritic* with *vesicular* texture.

(iii) There were some excellent, clearly labelled diagrams. Labels were essential to gain both marks. Some diagrams were not clear enough to be convincing, for example small circles with the occasional large circle does not show porphyritic texture.

(iv) Saying that metamorphic aureoles are produced by metamorphism does not offer an explanation. Some mistakenly thought that metamorphic aureoles were formed due to pressure. The scale of a metamorphic aureole was often hazy so that dykes and sills were also said to produce metamorphic aureoles. They were sometimes confused with baked margins. There needed to be a proper explanation as to what actually happens ie *country rocks are recrystallised by heat from an intrusion.*

(v) The factors controlling the width of a metamorphic aureole were widely known, including dip of the contact, and there were some good answers to this question including capable descriptions.

Teaching Tip

The 'Ten Word' definition
Students are challenged to write a definition of a geological term in ten words (or so)
- without using a dictionary
- without using the words in the term
- giving a full and complete explanation
- in good English

A metamorphic aureole comprises the rocks around an igneous intrusion altered by heat.

Question 3
A volcanic risk map was used for the first time in this question and most candidates interpreted it sensibly and succeeded in gaining at least some of the marks.

3 (a) (i) Many gained full marks. A few candidates incorrectly thought that N was at high risk.

(ii) Candidates often correctly included the prevailing winds in their explanations but forgot proximity to the volcano as a factor and so tended to gain just one of the two marks. If N was chosen in (i) explanations of this choice were credited so these candidates would not be penalised.

(iii) Most candidates chose bombs, some lava as the product found close to the volcano. A few suggested pyroclasts but didn't say that they would contain large blocks / clasts. Explanations were sometimes not offered. All that was needed was to say that large fragments fall nearer to the vent, or in the case of lava flows, that high viscosity lava does not flow far.

(iv) Some candidates misinterpreted the question and wrote about how to predict an eruption rather than analysing the risk associated with one were it to occur. There is some confusion in candidates' minds about this. Some did not mention any methods and wrote quite vague comments about the wind or the past.

(b) A significant proportion of candidates succeeded in identifying the broad areas correctly and gained some credit. The best responses showed a good degree of precision in completing the graph. There was also a range of creative guesswork. This graph has been used in previous papers but candidates are not usually asked to complete it and this created a problem for some candidates.

(c) This question produced a wide variation in response, with most knowing enough to gain some marks. Quartzite was often correctly included, as were limestone and calcite. The last line of the table was found to be the most difficult with burial being confused with regional metamorphism and gneiss being confused with schist.

Teaching Tip

Lost for Words
When asked about 'methods' it is a good idea to have a list of 'method words' that students can use. It avoids making general comments that do not refer to any methods. Some suitable 'method words' with which to begin answers are: monitor, survey, analyse, record, map, and interpret.

Question 4
This question was well answered by a large number of candidates with about 12% gaining full marks. The question produced a wide spread, using the full range of marks. Written communication was usually clear. Candidates appeared not to have run out of time.

There were some very good responses with environments of deposition clearly described and well learnt. Nearly all responses included diagrams with most of them being labelled.

There were, however, aspects of some answers that could be improved. Although most knew that wadi conglomerates were transported and deposited by water, a few suggested that they were wind transported. Diagrams often showed alluvial fans at the end of a wadi and identified the places where the conglomerates would form. However, some of these diagrams could have been improved by showing wadi channels as box shaped rather than 'v' shaped. There were good diagrams of the conglomerates showing poor sorting and sub rounded grains.

Several candidates described the formation of cross bedding when dealing with dune sandstones though this was not necessary. Descriptions of deposition on the lee side of dunes were often good. Some drawings of sand dunes showed them to be rather mound shaped and vertically exaggerated with steep precipices on the lee side. There is still scope for some improvement and further practise in drawing these diagrams, although many of them were good.

Candidates were less confident in illustrating playa lakes. Some did drawings of barred basins instead and labelled the sea. The better candidates knew the order of deposition of evaporites and were able to show it on their diagrams. Less good responses tended simply to state that evaporites form when water evaporates without mentioning the increasing concentration of dissolved ions or that the hot sun was responsible for the evaporation. The sequence of deposition was sometimes reversed or mixed up. Many candidates, however, produced some high quality answers to this question.

2834 Palaeontology (Written Examination)

General Comments

Overall, the paper was of appropriate difficulty for the A2 candidates. Candidates were well prepared for this subject, a reflection of increased calibre of teaching and examining over the past years. Recall of complex morphology and classification was much improved and knowledge of types of preservation was excellent. The extended answers 5 (a) and (b) were answered in detail, with many students gaining full marks for part (a).

As usual, the quality of the diagrams produced by the candidates was variable, and both good practice and poor practice was often centre specific. Only a few candidates drew excellent unlabelled diagrams, a huge improvement on previous years.

Comments on Individual Questions

Question 1

1 (a) (i) Most candidates identified the fossils correctly. Some identified phylum mollusca common to three fossils (A, B and C), a repetitious answer which is not likely to gain marks. Most candidates were aware of the differences in suture complexity and answered correctly. More mistakes occurred in the coral identification with *tabulate* or *scleractinian* being a common misidentification.

(**ii)** The *protoconch* was commonly misidentified as the *umbilicus*. The basic coral morphology was better prepared; the commonest mistake was to identify the *dissepiments* as *tabulae*.

(iii) Most candidates knew, or correctly guessed, these conditions for coral growth but they were least certain of salinity.

(iv) This section was often poorly answered with many very general statements that a change in conditions would not suit the coral. A surprising number seemed to think that it was the coral itself that was photosynthesising! Very few opted for an explanation of bleaching which had been expected as an obvious response.

(v) Generally correctly answered except for those who were unprepared to read the question and gave environments not related to climate. Incorrect answers included: *the photic zone, Cambrian period* and *marine,* which was too vague.

(b) A significant proportion of the candidates were unaware of the mathematical requirements set out in the specification. A minimum amount of preparation would have enabled them to handle powers of ten with confidence and to know how many millimetres there are in a metre. Dividing by 100 was a common problem.

Teaching Tip
Candidates must be encouraged to convert metres into millimetres and vice versa. Try the simple ideas given below.

1 kilometre = 1 000 metres
1 metre = 100 centimetres
1 centimetre = 10 millimetres

The number of millimetres in a kilometre is 1 000 000.

(c) Most candidates made a good attempt at this but there remains confusion over cast and mould which affected many responses. Some candidates thought that these types of fossils were only formed as an organism was pressed into the sediment and then removed, leaving an imprint. Diagrams here were also poor and often unlabelled.

Question 2

2 (a) (i) Most candidates were able to state the phylum as *Echinodermata*. Incorrect answers simply stated *echinoids*.

(ii) Candidates were less certain of which characteristics were *unique* to the phylum with many sub A level answers along the general lines of their occupying similar environments, style of feeding or having the same lineages.

(b) As there were only five choices and *holdfast* could be guessed by its function, it was a surprise when candidates could not answer this question. *Peristome* was the least well known term.

(c) (i) There were many possible alternative morphological points to be gained and most candidates took advantage of these. Drawings ranged from the superb to the unrecognisable and candidates should be given practice in this useful skill. Many candidates attempted to draw and label soft tissue, which was not a requirement of this question.

(ii) Candidates found the description of coiling difficult, very few were able to use the obvious terms, *dextral* and *sinistral*. Many wrote a paragraph trying to describe helicoidal coiling without using any technical terms at all.

(iii) Most candidates were unaware of what molluscs have in common despite the fact that three different groups have been studied. Very general ideas such as *a soft body in a hard shell* which does not differentiate from other groups such as brachiopods.

Question 3

3 (a) (i) The fossil diagrams provided sufficient information for most candidates to answer correctly. Incorrect answers were mainly for fossil K, usually *coral* and *crinoid*.

(ii) Many were unsure of the mode of life of belemnites, perhaps having concentrated their efforts on the major groups. Some gave contradictory terms such as *benthonic* and *nektonic*, clearly not understanding them.

(b) This section was poorly answered. Most candidates were unprepared and wrote answers on life and death assemblages, clearly misunderstanding the question. Many appeared to believe that an assemblage consisted of more than one of the same species not different types of organisms. Explanations of why these fossils could be found together were very poor. The explanation of deep marine environments was better, with many describing animals which had fallen out of the water column. There was a mixture of extant and extinct forms which could not gain marks as they could not be found in the same assemblage.

(c) **(i)** The majority of candidates failed to get full marks on this section. This may reflect the inadequate coverage of the topic in popular texts. Silica from pore waters can replace the original structure (sometimes progressively) or can infill pore spaces within bones, plants or shells (impregnation / petrifaction). *Carbonisation* was frequently incorrectly described as *replacement by carbon* or *carbon coating* of the skeleton. Fewer candidates recognised the formation of a carbon film by release of volatiles. Some used the word *volatile* but clearly did not understand its significance or the processes involved.

(ii) Candidates were well prepared for a question on exceptional preservation and got a good proportion of the available marks showing an excellent understanding of the mechanisms involved.

Teaching Tip

Students should be informed of the difference between *anoxic* and *anaerobic*. Many students use these words interchangeably.

Anoxic – no oxygen present in water.
Anaerobic – no oxygen present.

So if we are talking about a sediment, the term used must be *anaerobic* and not anoxic.

Question 4

4 **(a)** **(i)** Most candidates knew the phylum of *Trilobites*. Those unsure left this question blank.

(ii) Some failed to read the question and gave the mode of life for *Agnostus* (fossil M) but generally the terms were understood.

(iii) The relative sizes of cephalon and pygidium caused more uncertainty. Many had multiple guesses with a lot of crossing out evident on many papers.

(iv) There were good responses to the supposed functions of genal spines, the wide cephalon and fat-filled glabella. Trilobites appear more interesting and their exploits more memorable than other groups!

Teaching Tip

Where two marks are at stake, candidates should be expecting to describe either two functions or, in this case, explain the reasoning behind the supposed mechanism. This should be encouraged when practising past paper questions.

(b) There were very good answers to this section including excellent diagrams showing the appendages and resulting trace fossils.

(c) **(i)** Some candidates had difficulty in expressing the definition of evolution in concise terms. Many gave appropriate examples and good answers. Some left the question blank.

(ii) Many lost marks due to giving incorrect answers such as *microfossils* and *graptolites*. It was clear that some candidates had no idea of the geological ranges of many fossils, despite this being an implicit part of the specification.

(iii) This question was answered very well.

Question 5

5 (a) Overall the standard of answers was excellent for this long answer question and a large number of candidates gained full marks. These candidates produced well ordered essays comparing brachiopods and bivalves. Such candidates also produced good labelled diagrams to illustrate the differences.

The relative sizes and symmetry of valves were well understood and illustrated (some still used the term shell and some lines of symmetry would have benefited from a label). The differences in musculature were also well written but less well illustrated.

Some centres had candidates who concentrated on differences in shell structure or dentition, but did not mention some of the easier differences such as symmetry. A few candidates answered in tables or bullet point lists which is not good for attaining the QWC marks.

The modes of life provided much material and accrued marks but occasionally tended to drift into an answer on bivalve modes of life rather than the comparison intended.

5 (b) There were many good answers for this question, often with a variety of different diagrams. There were excellent diagrams of way-up criteria which were well drawn and labelled. Some confused the law of superposition and way-up criteria. Included fragments had few examples and poor diagrams, the worst examples simply talking about fossils. Cross cutting relationships featured diagrams showing dykes illustrating the main principles.

There was no evidence that the candidates had run out of time, as many had used extension sheets to complete their answers for question 5 (a) and (b).

The quality of written communication was generally of a good standard though spelling of technical terms is an issue.

Grade Thresholds

Advanced GCE (Geology) (3884, 7884)
January 2008 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
2831	Raw	60	43	38	33	28	23	0
	UMS	90	72	63	54	45	36	0
2832	Raw	60	44	38	32	27	22	0
	UMS	90	72	63	54	45	36	0
2834	Raw	90	72	65	58	51	44	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
3884	300	240	210	180	150	120	0
7884	600	480	420	360	300	240	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
3884	6.7	26.7	53.3	73.3	93.3	100.0	15
7884	0.0	50.0	100.0	100.0	100.0	100.0	4

19 candidates aggregated this series

For a description of how UMS marks are calculated see:
http://www.ocr.org.uk/learners/ums_results.html

Statistics are correct at the time of publication.

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