

Mark Scheme for the Unit

January 2010

3884/7884/MS/R/10J

OCR (Oxford Cambridge and RSA) is a leading UK awarding body, providing a wide range of qualifications to meet the needs of pupils of all ages and abilities. OCR qualifications include AS/A Levels, Diplomas, GCSEs, OCR Nationals, Functional Skills, Key Skills, Entry Level qualifications, NVQs and vocational qualifications in areas such as IT, business, languages, teaching/training, administration and secretarial skills.

It is also responsible for developing new specifications to meet national requirements and the needs of students and teachers. OCR is a not-for-profit organisation; any surplus made is invested back into the establishment to help towards the development of qualifications and support which keep pace with the changing needs of today's society.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2010

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annesley
NOTTINGHAM
NG15 0DL

Telephone: 0870 770 6622
Facsimile: 01223 552610
E-mail: publications@ocr.org.uk

CONTENTS

Advanced GCE Geology (7884)

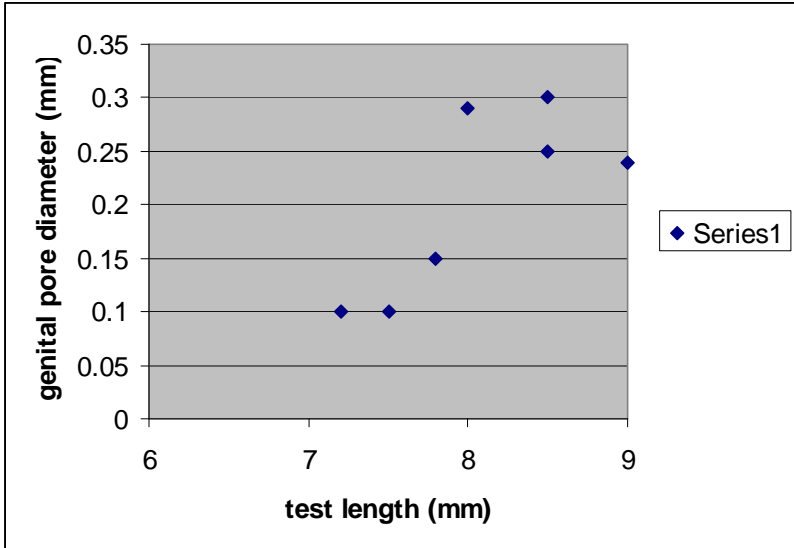
Advanced Subsidiary GCE Geology (3884)

MARK SCHEME FOR THE UNIT

Unit/Content	Page
2834 Palaeontology	1
Grade Thresholds	8

2834 Palaeontology

Question	Expected Answers	Marks
1 a) i)	A = belemnite/belemnite/belemnoid/coleoid (1) B = gastropod (1) C = crinoid (1) D = ammonite/ammonoid (1)	[4]
ii)	recognisable diagram (1) 2 correct labels brachia/stem/ossicle/calyx/holdfast (2)	[3]
iii)	A = nektonic (1) C = sessile (1) D = nektonic (1)	[3]
b) i)	dissolution of original fossil material occurs silica is dissolved in groundwater pore waters carry silica silica recrystallises when stable fills voids in rock atom by atom replacement pores in wood or bone infilled increasing density Any 3.	
ii)	suitable labelled diagram(s) to show moulds and casts (1) description of burial dissolution of fossil material breakage along lines of weakness some may be infilled with sediment/precipitation from ground water differences between mould and cast mark diagrams as text Any 2.	[1]
	Total	[16]

Question	Expected Answers	Marks																												
2 (a) (i)	<table><thead><tr><th>features</th><th colspan="3">options</th></tr></thead><tbody><tr><td>test composed of calcite plates</td><td>E</td><td>F</td><td>both</td></tr><tr><td>pore pairs</td><td>E</td><td>F</td><td>both</td></tr><tr><td>anterior groove</td><td>E</td><td>F</td><td>both</td></tr><tr><td>tubercle</td><td>E</td><td>F</td><td>both</td></tr><tr><td>petaloid ambulacra</td><td>E</td><td>F</td><td>both</td></tr><tr><td>anus</td><td>E</td><td>F</td><td>both</td></tr></tbody></table>	features	options			test composed of calcite plates	E	F	both	pore pairs	E	F	both	anterior groove	E	F	both	tubercle	E	F	both	petaloid ambulacra	E	F	both	anus	E	F	both	[5]
features	options																													
test composed of calcite plates	E	F	both																											
pore pairs	E	F	both																											
anterior groove	E	F	both																											
tubercle	E	F	both																											
petaloid ambulacra	E	F	both																											
anus	E	F	both																											
(ii)	<u>tube feet</u> respiration/attachment/movement/food gathering/reproduction (1) <u>plastron</u> spine attachment/digging burrow/small amounts of movement (1)	[2]																												
(iii)	irregular/ <i>Micraster</i> (1)	[1]																												
(iv)	Movement/protection/digging (1) Any two correct for 1 mark.	[1]																												
(b) (i)	<div><table><thead><tr><th>test length (mm)</th><th>genital pore diameter (mm)</th></tr></thead><tbody><tr><td>7.2</td><td>0.10</td></tr><tr><td>7.5</td><td>0.10</td></tr><tr><td>7.8</td><td>0.15</td></tr><tr><td>8.0</td><td>0.29</td></tr><tr><td>8.5</td><td>0.25</td></tr><tr><td>8.5</td><td>0.30</td></tr><tr><td>9.0</td><td>0.24</td></tr></tbody></table></div> <p>2 – 3 correct = 1 4 – 5 correct = 2 6 – 7 correct = 3</p>	test length (mm)	genital pore diameter (mm)	7.2	0.10	7.5	0.10	7.8	0.15	8.0	0.29	8.5	0.25	8.5	0.30	9.0	0.24	[3]												
test length (mm)	genital pore diameter (mm)																													
7.2	0.10																													
7.5	0.10																													
7.8	0.15																													
8.0	0.29																													
8.5	0.25																													
8.5	0.30																													
9.0	0.24																													

Question	Expected Answers	Marks
2 (b) (ii)	positive correlation or two separate clusters or sizes/AW (1) juvenile and adult specimens or two separate species/AW (1)	[2]
(iii)	sample size too small to be statistically significant/too small to test using stats (1)	[1]
	Total	[15]

Question	Expected Answers	Marks
3 (a) (i)	chitin/reinforced with calcite (1)	[1]
(ii)	genal spine = structure hanging down from cephalon (1) facial suture = correct line to cheek margin (1) glabella = correct line to centre of cephalon (1) pygidium = tail piece indicated (1)	[4]
(iii)	one pleuron shaded correctly (not whole segment) (1)	[1]
(b) (i)	G = low light dweller/below photic zone/burrower/particle feeder or scavenger/infaunal/accept planktonic (1) H = benthonic/hunter or scavenger/walks on sea floor/epifaunal (1)	[2]
(ii)	large eyes/surrounding eyes to see in dim light/hunting above and below many thoracic segments many swimming legs and gills long genal spines to stabilise in water column inflated glabella floatation device One mark for the feature and one for explanation in pairs.	[4]
(c) (i)	<i>Phillipsia</i> (1)	[1]
(ii)	geologically restricted/evolved fast/easy to recognise/geographically widespread/numerous/found in different environments (facies)/easily preserved (1)	[1]
(d)	labelled diagram of resting trace labelled diagram of walking trace description of formation of resting trace/gill impressions (<i>Rusophycus</i>) description of formation of walking tracks (<i>Cruziana</i>) Any 3.	
	Total	[18]

Question	Expected Answers	Marks
4 (a) (i)	Pelagic (1) life assemblage (1) anoxic (1) epifaunal (1) derived fossil (1)	[5]
(ii)	High–energy shelf fossils brachiopods/bivalves/trilobites/corals/microfossils any two for one mark explanation thick shelled for strength/may have ribs/ability to burrow/strongly attached/strong muscles/streamlined shells Any 2.	[1]
(b) (i)	law of cross cutting relationships recognisable labelled diagram (1) explanation of how to tell youngest from oldest (1) law of superposition recognisable labelled diagram (1) explanation of how to tell youngest from oldest (1)	[4]
(c) (i)	half lives calculated/states half life/relative proportions of parent and daughter isotopes Any 2.	
(ii)	loss of daughter atoms/argon gas lost/problems resetting geological clock/makes rock appear younger/rock has to correct minerals (1)	[1]
	Total	[16]

Question	Expected Answers	Marks
5 (a)	<p>similarities</p> <ol style="list-style-type: none"> 1 calcareous shell (1) 2 two valves (1) 3 umbos present (1) 4 growth lines (1) 5 ribs and ornament (1) 6 particle/filter feeder (1) 6a adductor muscles (1) <p>differences</p> <p>symmetry – brachiopods have median plane symmetry/bivalves</p> <ol style="list-style-type: none"> 7 between valves (1) brachiopods have unequal sized valves/bivalves same sized valves 8 (usually) (1) 9 bivalve shells are three layered/brachiopods are single layer (1) 10 bivalves shells can grow much larger (eg clams) (1) 11 opening mechanisms different (1) 12 bivalves have a ligament to open shells/brachiopods don't bivalves have a single muscle or pair of adductors/brachiopods have (1) 13 diductors and adductors (1) 14 detail of opening mechanisms (1) 15 bivalves have a foot/brachiopods do not (1) bivalves may be attached by a byssus or cement/brachiopods by a 16 pedicle (1) 17 bivalves <u>feed</u> using siphons/brachiopods <u>feed</u> use a lophophore (1) 18 pallial line present in bivalves/absent in brachiopods (1) 19 siphons present in bivalves/absent in brachiopods (1) 20 different hinge apparatus (1) 21 detail of hinge apparatus (1) <p>Diagrams to illustrate – mark as text</p> <p>No diagrams = Max 8.</p>	[12]
5 (b)	<p>morphology</p> <ol style="list-style-type: none"> 1 possess tabulae (1) 2 many/small corallites (1) 3 may have dissepiments (1) 4 six fold radial symmetry (1) 5 colonial or solitary forms (1) 6 do not have mural pores (1) 7 may have columella (1) 8 possess many septa (major and minor) (1) 9 labelled diagrams to illustrate morphology (2) 	Max [11]

Question	Expected Answers	Marks
5 (b) cont	10 conditions needed near the equator (1) 11 clear water (to not clog polyps) (1) 12 shallow water for algae (1) 13 discussion of symbiotic relationship with algae (1) 14 high energy wave action for oxygenation (1) 15 fully marine conditions/normal salinity (1) 16 temperature between 23 and 27°C (allow reasonable range) (1) 17 position of coral reefs in the UK now (1) 18 inferred position in the past (1) No diagrams = Max 10.	

QWC

- 2 marks Answers are structured clearly and logically, so that the candidate communicates effectively, uses a wide range of specialist terms with precision and spelling, punctuation and grammar are accurate.
- 1 mark There are shortcomings in the structure of the answer, however, the candidate is able to communicate knowledge and ideas adequately, a limited range of specialist terms are used appropriately and spelling, punctuation and grammar are generally accurate with few errors.
- 0 marks There are severe shortcomings in the organisation and presentation of the answer, leading to a failure to communicate knowledge and ideas. There are significant errors in the use of language, spelling, punctuation and grammar which makes the candidate's meaning uncertain.

Grade Thresholds

Advanced GCE (Geology) (3884, 7884)
January 2010 Examination Series

Unit Threshold Marks

Unit		Maximum Mark	A	B	C	D	E	U
2834	Raw	90	75	69	63	57	52	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (ie after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
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
7884	0.0	33.3	33.3	100.0	100.0	100.0	3

3 candidates aggregated this series

For a description of how UMS marks are calculated see:

<http://www.ocr.org.uk/learners/ums/index.html>

Statistics are correct at the time of publication.

INSET event for GCE Geology

**An INSET event is being planned for the autumn term 2010
at
the British Geological Survey, Keyworth, Nottingham.**

See the OCR website next term for details.

**OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU**

OCR Customer Contact Centre

14 – 19 Qualifications (General)

Telephone: 01223 553998

Facsimile: 01223 552627

Email: general.qualifications@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations
is a Company Limited by Guarantee
Registered in England
Registered Office; 1 Hills Road, Cambridge, CB1 2EU
Registered Company Number: 3484466
OCR is an exempt Charity



OCR (Oxford Cambridge and RSA Examinations)
Head office
Telephone: 01223 552552
Facsimile: 01223 552553

© OCR 2010