

**Advanced Subsidiary GCE
GEOLOGY**

F793

Unit F793: Evaluative Task

Specimen Task

For use from September 2008 to June 2009.

All items required by teachers and candidates for this task are included in this pack.

INFORMATION FOR CANDIDATES

- Evaluative Task

INFORMATION FOR TEACHERS

- Mark scheme.
- Instructions for Teachers and Technicians.

SPECIMEN

**Advanced Subsidiary GCE
GEOLOGY**

F793

Unit F793: Evaluative Task

Specimen Task

For use from September 2008 to June 2009.

Candidates answer on this task sheet.

Additional Materials:
calculator

INSTRUCTIONS TO CANDIDATES

- Answer **all** parts of the task.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each part of the task.
- The total number of marks for this task is **20**.

ADVICE TO CANDIDATES

- Read each part carefully and make sure you know what you have to do before starting your answer.

FOR TEACHER'S USE		
	Max.	Mark
TOTAL	20	

This task consists of **8** printed pages.

Determining the environment of deposition from sand samples

Introduction

The sediment data provided here has been produced from results from one student who repeated the experiment 3 times. The four sand samples were collected on field trips from Quaternary sediments that were deposited in different environments; glacial, fluvial, beach and dune. You will need to carry out a sieving exercise of your own before you do this exercise in order to understand the problems and errors that may occur. You will not be able to answer questions 6 and 7 without having carried out a trial experiment.

A representative sample of 100 g of each of the four sand samples was poured into the top of a sieve stack consisting of six sieves. The sieve stack was shaken for exactly 1 minute and then the contents of each sieve were weighed and the data recorded in Table 1 for each sample.

Table 1

sieve size		weight	weight	cumulative
mm	phi	(grams)	%	weight %
2	-1	15	15	15
1	0	18	18	33
0.5	1	22	22	55
0.25	2	20	20	75
0.125	3	15	15	90
0.063	4	9	9	99
residue	>4	1	1	100
total		100	100	100

sieve size		weight	weight	cumulative
mm	phi	(grams)	%	weight %
2	-1	0	0	0
1	0	2	2	2
0.5	1	19	19	21
0.25	2	46	46	67
0.125	3	22	22	89
0.063	4	10	10	99
residue	>4	1	1	100
total		100	100	100

sieve size		weight	weight	cumulative
mm	phi	(grams)	%	weight %
2	-1	5	5	5
1	0	15	15	21
0.5	1	39	40	61
0.25	2	29	30	91
0.125	3	7	7	98
0.063	4	2	2	100
residue	>4	0	0	100
total		97	100	100

sieve size		weight	weight	cumulative
mm	phi	(grams)	%	weight %
2	-1	0	0	0
1	0	0	0	0
0.5	1	12	12	12
0.25	2	64	64	76
0.125	3	24	24	100
0.063	4	0	0	100
residue	>4	0	0	100
total		100	100	100

Description of the samples is shown in **Table 2** below.

sample	description
A	angular , sub angular and sub rounded grains of varied composition including quartz and rock fragments
B	rounded and well rounded grains composed of quartz with rare shell fragments
C	sub angular, rounded and sub rounded grains mainly of quartz with some rock fragments
D	well rounded grains composed of quartz

Analysis

Graph paper is provided on pages 4-5 of this question paper.

- 1 Plot histograms for all four samples on one sheet of graph paper so that they can be compared. You can use a computer to plot the graphs if you wish. [2]
- 2 Plot cumulative frequency graphs to show all four samples on one set of axes. [2]
- 3 Calculate the coefficient of sorting of all 4 samples from the cumulative frequency graph and use the correct description of sorting.

$$\text{sorting} = \frac{\phi_{84} - \phi_{16}}{2}$$

coefficient of sorting	description of sorting
< 0.35	very well sorted
0.35 – 0.5	well sorted
0.5 – 0.71	moderately well sorted
0.71 – 1.0	moderately sorted
> 1.0	poorly sorted

sample	co-efficient of sorting	description of sorting
A		
B		
C		
D		

[2]

- 4 Calculate the mean for each sample.

sample	mean
A	
B	
C	
D	

[1]

[Turn over

SPECIMEN

SPECIMEN

[Turn over

Interpretation

5 Identify the environment of deposition for samples **A, B, C** and **D** using secondary sources as well as the analysed data and descriptions of the sediment. Interpret how the sediments can be matched to glacial, fluvial, beach and aeolian deposition.

.....
.....
.....
.....
.....
.....
.....
.....

[4]

Evaluation of methodology

6 Explain why when different groups of students carry out the sieving exercise using the same samples, the results vary. Refer in your answer to :

- experimental inaccuracies,
- problems with equipment and
- other sources of error.

.....
.....
.....
.....
.....
.....
.....
.....

[4]

7 Suggest improvements to the methods and equipment used and how to reduce sources of error.

.....
.....
.....
.....
.....

[3]

Evaluation of results

8 Explain why sediment will vary, even within one environment of deposition.

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

Total [20]

END OF TASK

SPECIMEN

SPECIMEN

Copyright Acknowledgements:

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (OCR) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest opportunity.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.

© OCR 2007

The maximum mark for this task is **20**.

For use from September 2008 to June 2009.

SPECIMEN

Question Number	Answer	Max Mark
1	Analyse data using a histogram for each of the 4 sediments on the same scales for comparison	[1] [1]
2	Analyse data using cumulative frequency curves for each sediment All four curves on the same axes and clearly labelled	[1] [1]
3	Analyse data using calculations of co-efficient of sorting (1) Analyse data applying the correct sorting term (1)	[2]
4	Analyse data using the mean for all sediment samples	[1]
5	Interpret the environments of deposition for each of the sediments A, B, C and D Use the descriptions of sediments' grain shape and composition as evidence for each environment (1 mark for each sediment)	[4]
6	Evaluate the sieving method used (1) Evaluate inaccuracies as a result of equipment – balances and sieves (1) Evaluate error based on biased collection of sediment (1) Evaluate error introduced by sieve shaking by hand (1)	[4]
7	Suggest improvements to the methods used (1) Suggest improvements to the equipment used (1) Describe how to reduce sources of error (1)	[3]
8	lateral and vertical variation variation in sediment type transported variation in rate of deposition variation in rate of erosion in source area variation in source rock exposed for weathering and erosion (any 2)	[2]
Total		[20]

For use from September 2008 to June 2009.

SPECIMEN

This task relates to Module 3, Unit F792. There is no time limit but it is expected that it can be completed within one timetabled session.

It is assumed that you will have completed the teaching of the above module before setting your students this task. This module has links to other modules which contain related learning experiences – please refer to your specification.

Candidates may attempt more than one Evaluative task with the best mark from this type of task being used towards the overall mark for Unit F793.

Preparing for the assessment

It is expected that before candidates attempt Evaluative Task (Unit F793) they will have had some general preparation in their lessons. They will be assessed on a number of skills such as demonstration of skilful and safe practical techniques using suitable qualitative methods, the ability to make and record valid observations, and the ability to organise results suitably. It is therefore essential that they should have some advance practice in these areas so that they can maximise their attainment.

Preparing candidates

At the start of the task the candidates should be given the task sheet.

Candidates must work on the task individually under controlled conditions with the completed task being submitted to the teacher at the end of the lesson. Completed tasks should be kept under secure conditions until results are issued by OCR.

Candidates should not be given the opportunity to redraft their work, as this is likely to require an input of specific advice. If a teacher feels that a candidate has under-performed, the candidate may be given an alternative task. In such cases it is essential that the candidate be given detailed feedback on the completed assessment before undertaking another Evaluative Task. Candidates are permitted to take each task **once** only.

Assessing the candidate's work

The mark scheme supplied with this pack should be used to determine a candidate's mark out of a total of 20 marks. The cover sheet for the task contains a grid for ease of recording marks. To aid moderators it is preferable that teachers mark work using red ink, including any appropriate annotations to support the award of marks.

Notes to assist teachers with this task

Teachers must trial the task before candidates are given it, to ensure that the apparatus, materials, chemicals etc provided by the centre are appropriate. The teacher carrying out the trial must complete a candidate's task sheet showing the results obtained, and retain this, clearly labelled, so that it can be provided to the moderator when requested.

Health and Safety

Attention is drawn to Appendix C of the specification.