



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark scheme January 2004

GCE

Geography A

Unit GGA7

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General Guidance for Examiners

Quality of Written Communication

As required by QCA, the marking scheme for this unit includes an overall assessment of quality of written communication. There are no discrete marks for the assessment of written communications but where questions are "Levels" marked, written communication will be assessed as one of the criteria within each level.

Level 1: Language is basic, descriptions and explanations are over simplified and lack clarity.

Level 2: Generally accurate use of language; descriptions and explanations can be easily followed, but are not clearly expressed throughout.

Level 3: Accurate and appropriate use of language; descriptions and explanations are expressed with clarity throughout.

Levels Marking - General Criteria

The following general criteria relate to knowledge, understanding and their critical application and the quality of written communication as outlined in the AQA Geography A subject specification. They are designed to assist examiners in determining into which band the quality of response should be placed, and should be used when assessing the level of response an answer has achieved. It is anticipated that candidates' performances under the various dimensions will be broadly inter-related and the general guidelines for each level are as follows:

Level 1: An answer at this level is likely to:

- display a basic understanding of the topic;
- make one of two points without support of appropriate exemplification or application of principle;
- demonstrate a simplistic style of writing perhaps lacking close relation to the term of the question and unlikely to communicate complexity of subject matter;
- lack organisation, relevance and specialist vocabulary;
- demonstrate deficiencies in legibility, spelling, grammar and punctuation which detract from the clarity of meaning.

Level 2: An answer at this level is likely to:

- display a clear understanding of the topic;
- make one or two points with support of appropriate exemplification and/or application of principle;
- demonstrate a style of writing which matches the requirements of the question and acknowledges the potential complexity of the subject matter;
- demonstrate relevance and coherence with appropriate use of specialist vocabulary;
- demonstrate legibility of text, and qualities of spelling, grammar and punctuation which do not detract from the clarity of meaning.

Level 3: An answer at this level is likely to:

- display a detailed understanding of the topic;
- make several points with support of appropriate exemplification and/or application of principle;
- demonstrate a sophisticated style of writing incorporating measured and qualified explanation and comment as required by the question and reflecting awareness of the complexity of subject matter and incompleteness/tentativeness of explanation;
- demonstrate a clear sense of purpose so that the responses are seen to closely relate to the requirements of the question with confident use of specialist vocabulary;
- demonstrate legibility of text, and qualities of spelling, grammar and punctuation which contribute to complete clarity of meaning.

NB A perfect answer is not usually required for full marks. Clearly it will be possible for an individual candidate to demonstrate variable performance between the levels. In such cases the principle of best-fit should be applied. Experience suggests that the use of exemplars within this mark scheme and the discussion which takes place during the Co-ordination Meeting normally provides sufficient guidance on the use of levels in marking.

Annotation of Scripts

- Where an answer is marked using a levels of response scheme the examiner should annotate the script with 'L1', 'L2' or 'L3' at the point where that level is thought to have been reached. The consequent mark should appear in the right hand column. Where an answer fails to achieve Level 1, zero marks should be given.
- Where answers do not require levels of response marking, each script should be annotated to show that one tick equals one mark. It is helpful if the tick can be positioned in the part of the answer which is thought to be credit-worthy.

General Advice

It is important to recognise that many of the answers shown within this marking scheme are only exemplars. Where possible, the range of accepted responses is indicated, but because many questions are open-ended in their nature, alternative answers may be equally credit-worthy. The degree of acceptability is clarified through the Standardisation Meeting and subsequently by telephone with the Team Leader as necessary.

Question 1

- (a) Candidates should summarise key changes shown on Figure P1 with clear reference to objectives:

Landforms change from features such as waterfalls, rapids to small and then more exaggerated meanders on wider floodplain, perhaps with braiding of channel; channel becomes wider, bedload overall becomes smaller;

Dominant processes change from vertical erosion to lateral erosion and deposition; clear interrelationship between landforms and processes – vertical erosion encourages formation of waterfalls, etc., while lateral erosion of greater significance to meander formation; similarly clear changes relating to other features – width increases as lateral erosion increases.

Usefulness of Figure P1 relates to observed changes on one stream and implication that those may be present generally on all streams and objectives allow us to see to what extent this is true of study area around Edale.

Reference to own fieldwork may relate generally to testing models: own experience in setting up fieldwork in alternative area and application to this study area; perhaps use of similar models, e.g. those predicting velocity/discharge changes would clearly be viable here.

Level 1 Describes, perhaps in detail, changes shown on Figure P1. Heavy reliance on Figure P1 per se. No reference to own fieldwork.
(1 mark)

Level 2 Relates changes shown on Figure P1 to objectives stated. Aware of purpose of enquiry to relate/use Figure P1 as a predictor and compare to study area.. May perceive links suggested by Figure P1/objectives. Implicit reference to own fieldwork or explicit but token reference to own fieldwork.
(2-3 marks)

Level 3 Clearly relates changes shown on Figure P1 to objectives stated. Clear awareness of purpose of enquiry and the use of Figure P1 as a predictor and attempt to see extent to which study area matches predictions. Will note links between Figure P1/objectives. Explicit reference in a meaningful way to own fieldwork.
(4 marks)

Max. Marks 4

- (b) May refer to:

length of time it takes to reach study area;
cost of journey to study area;
ease of access to study area – i.e. road quality, public transport access;
ease of access to study sites within area – i.e. is there footpath access, is any private land crossed?;
safety considerations – can river be reached safely down banks, is it of an appropriate depth to collect data?

(Either 2 x 1 per undeveloped point or 1 x (1+1) per developed point)

Max. Marks 2

Question 2

- (a) Problems likely to relate to:-
(Problems ✓ p)

- ✓(p) determining actual height of banks where width can be measured (1)
not often clear-cut as banks at different height (1)
how far up what may be valley sides do measurements occur? (1)
need to ensure tape pulled tight (1)
if it sags in middle width increases (1);
measurement of bankful depth done from surface of water – difficult to
keep metre rule actually on a line with surface (1)
wind may blow water (1)
in some cases (site 3) distance between surface of water and bankful height
exceeded 1 metre (1)
2 metre rules had to be used reducing accuracy (1).

May refer to problems ascertaining depth of channel ... up to 2 as long as
impact on bankful depth acknowledged.
(Purpose ✓ a)

- ✓(a) Purpose – to determine conditions during maximum flow (1)
what might be seen as extreme conditions (1)
which have a clear impact on channel landforms and other features (1)
disproportionately important in comparison to their frequency of occurrence (1).

*(1 per undeveloped point, 1 + 1 per developed point
At least 2 marks for each of problems and purpose. Allow up to 3 marks for
reference to own fieldwork).* **Max. 6 marks**

- (b) Expect a systematic and/or random sampling strategy.
A wide variety of responses likely.
All should consider determining initial location of point to sample, and subsequently
determining which example to retrieve from location identified, e.g.

every 2 heel to toe steps (1)
down the middle of the channel (1)
identify bedload item(s) marked by position of tip of boot (1)
making site selection systematic (1)
then bend down, place hand in water at tip of boot (1)
close eyes and then retrieve first item of bedload touched (1)
making ultimate selection random (to a degree) (1).

(max 3 for where – need 1 for actual picking up of sample).

*(Allow all marks available for specific reference to own fieldwork. Credit feasible answers –
random number table responses will need to be practically applicable.)*

Max. 4 marks

- (b) Responses should relate to both obtaining the water from the river and then its subsequent processing. Minimum of 2 marks for each section.

Reference should be made to equipment used, (e.g. commercially produced flask or even a squash bottle) and detail construction, characteristics (up to 2 marks).

The obtaining of water ... from the river ... (up to 3 marks) e.g. lowering carefully to the bottom and the raising it throughout depth ... and determining no. of litres in sample.

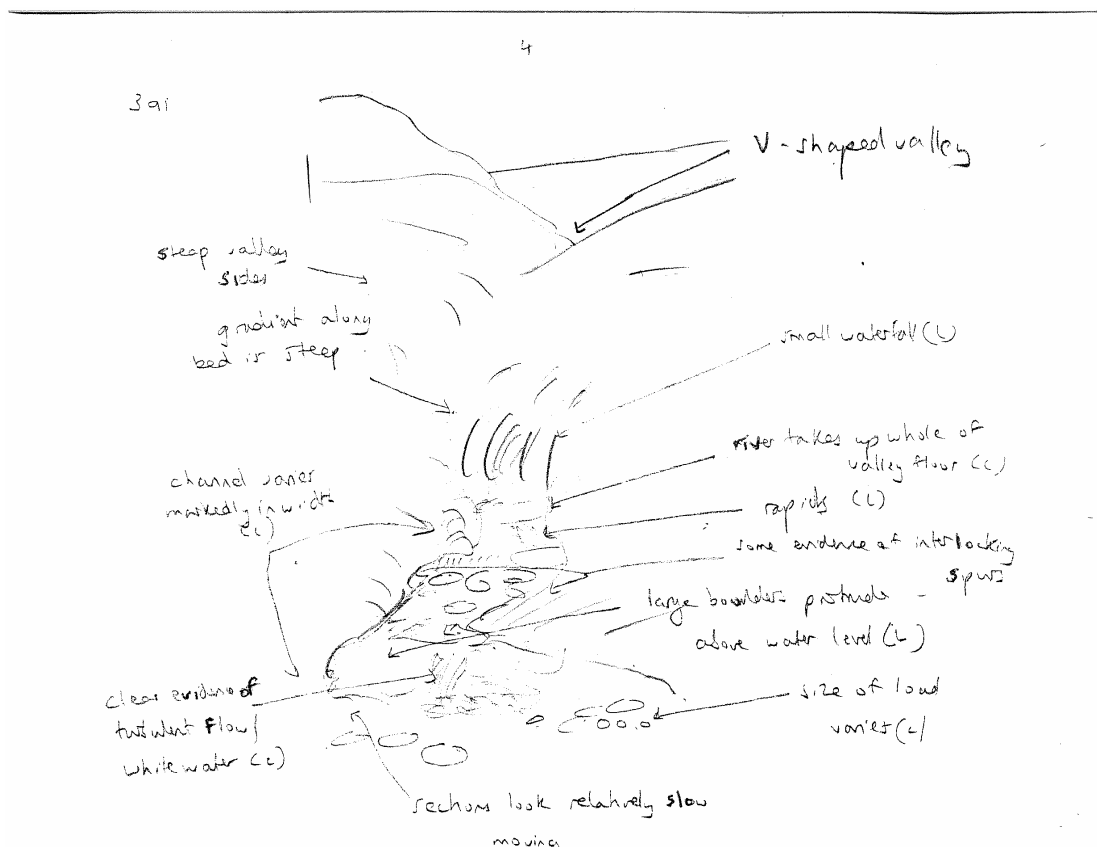
The processing of the sample (up to 4 marks) e.g. allowing sample to settle; pouring off clear water; passing water through filter paper; drying of filter paper in oven (105°C for 2 hrs); then weighed and previously known weight of dry filter paper subtracted to determine weight of sediment, and number of grams per litre can be ascertained.

(Allow all marks available for specific reference to own fieldwork)

Max. 6 marks

Question 3

(a) (i)



Can achieve maximum for labels – 8 + 1, minimum 2 for landforms and characteristics. If maximum not achieved for labels, award up to 3 for sketch ✓ (s) which illustrates:

✓ (s)

- waterfalls/rapids (1)
- boulders above water level (1)
- varying types of flow (1)
- varying width (1)
- steepness of profile (1)

Max 3 for labels if plan view/cross section.

Max. 8 marks

(a) (ii) Much evidence to support changes suggested by Figure P1: _

presence of small waterfalls and rapids at site 1 only;
 a more winding section of site 2 with deep and shallow sections
 whilst beyond site 3, clear evidence of riffles, pools and meanders;
 the river bed is clearly much steeper at site 1 than site 2 and very gentle at site 3;
 the bed is very uneven at site 1 with many large boulders, which are clearly less apparent at site 2 and not present further downstream;
 the channel clearly becomes wider downstream and the channel no longer occupies the whole of the valley floor, but instead a flood plain is present.

There is clearly much evidence in support of changes – but also some more limited evidence which is in conflict with changes e.g.

Eg. braiding is more in evidence at site 2 than 3;
meanders present to varying degrees at site 2 and beyond site 3;
meander beyond site 3 is not a textbook example as outside bend appears to have expected characteristics of inside bend.

- Level 1** Description of photographs showing landforms and/or characteristics.
May describe sites individually.
Will use appropriate terms, and perceives all description is in support.
(1-2 marks)
- Level 2** Begins to target description to question and seeks evidence of change downstream relating to landforms and/or characteristics.
Will refer to photographs as evidence.
Will be some evaluation, may perceive evidence as all in support.
(3-4 marks)
- Level 3** Clearly targets description to question and provides targeted evidence of change downstream relating to landforms and characteristics.
Will refer to specific photographs as evidence.
Will be aware that there is some imperfection in evidenced support.
Will offer explicit, informed evaluation.
(5-6 marks)
Max. 6 marks

- (b) (i)**
 2 x 1 for correctly locating coordinate on cross section.
 2 x 1 for correctly marking line for velocity.
 Max. 3 if cross-section coordinates not joined. **(Max. 4 marks)**

- (b) (ii)** Reference should be made to each criterion in turn.

- w Width: does generally increase progressively downstream except penultimate site which is the widest;
 final site clearly much wider than the first – by approx. 4 times.
- d Depth: deepest water is clearly at first location and shallowest at fourth;
 incomplete evidence suggests evidence very limited in confirming hypothesis;
 a fuller picture confirms such variation with 1.2 being shallower than 1.1 and similar to 2.1 and 3.1 with the final site becoming shallower again. Channel actually split at 2.2, and almost at 2.1.
- v Velocity: does generally increase downstream with 3rd site clearly having a faster flow than 1st site. However, many measurements the same and, therefore, not very conclusive.

Overall, strongest evidence relates to width, followed by velocity – much more of a tenuous link and finally, depth, which shows almost a reversal of what would be expected.

May seek links, e.g. velocity fastest where stream wider.

Level 1 Makes simple statements relating to one or two criteria, or describes sites individually. *(1-2 marks)*

Level 2 Refers to two or three criteria.
 Focus is on change downstream.
 Reference to evidence in support.
 Tentative evaluation. *(3-4 marks)*

Level 3 Clearly refers to all three criteria.
 Targets change downstream.
 An awareness of conflicting evidence.
 Points made supported by specific reference to evidence.
 Clearly evaluates. *(5-6 marks)*
Max. 6 marks

- (c) (i) 3 x 1 for correctly placing divisions on pie chart - 23.3

46.6

66.6

(Max. 2 if segments not labelled.)

3 marks

- (c) (ii) 2 x (1 + 1) for correctly plotting coordinate on x and y axis respectively.

(Max. 3 if locations not identified on graph.)

4 marks

- (c) (iii) Bedload shape –proportion of angular shaped bedload clearly reduces by about half, similarly, rounded shaped bedload increases from below 5% to over 30%, a six-fold increase.
Changes are less clearcut with both subangular and subrounded with the latter actually decreasing.

- s Bedload size – generally reduces downstream, but not clearcut, in two out of three sites, second segment has larger size than first, although between sites, there is an overall reduction.

- l Link to discharge – as discharge increases, bedload generally decreases in size but not clearcut; 3.1 certainly an exception where bedload size relatively large for discharge level. Similarly, as discharge increases, general reduction in bedload which is angular and increase in those rounded.

Level 1 Describes changes simply in relation to shape and/or size. Will perceive evidence to support what is expected.

(1-2 marks)

Level 2 An awareness that changes downstream of shape and/or size overall match what would be expected, but note some evidence against. Begins to link to increasing discharge.

(3-4 marks)

Level 3 Clearly targets information displayed to change in shape and size and clear awareness that changes are far from supporting what might be expected.

Aware of overall link between increasing discharge and reduction in size, increasing roundness.

(5-6 marks)

Max. 6 marks

- (c) (iv) B is best permissible with reference to Fig. P1 (1)
 which is expected/alternative (1)
 and one tailed (1)
 Also allow A (1) expected/alternative (1) and two tailed (1). **3 marks**
- (c) (v) 1 mark for completing ranks of last two in x column
 26 and 7
 1 mark for calculating $\Sigma r x - 291$
 1 mark for identifying correct figures in equation
- $$225 + \frac{240}{2} - 291 \quad \text{Allow} \quad 225 + \frac{15(16)}{2} - 291$$
- 1 mark for identifying value of U – 54 **4 marks**
- (c) (vi) The value of U of 54 is less than the critical value of 72 (1)
 at 0.05 level and 76 at 0.01 level (1) 56 at 0.05 level
 which means that we can be 95%/99% certain (1)
 that there is a difference in the size of the bedload with
 that nearest source being larger (1)
 and so expected hypothesis can be accepted (1) **3 marks**

- (d) Responses should relate to the processes identified by Figure P1.
 Vertical erosion (and headward) is dominant nearest the source resulting in waterfalls, rapids, steep bed.
 Lateral erosion becomes more important further downstream and channel begins to meander as riffles and pools develop.
 Deposition is apparent throughout with load being largest near source and generally smaller downstream.

Figure P3 site 1, provides evidence of vertical erosion being dominant with the channel taking up the whole of the valley floor and the steepness of the gradient is apparent which will increase velocity and, therefore, energy of the river.
 Large bedload can clearly be observed.

At site 2, valley floor is wider as a result of lateral erosion and there are flat areas next to the channel, the channel winds to a greater extent making it more sinuous than before due to lateral erosion. At part of the site, the stream is choked by deposited material, evidence of the increase in the process of deposition.

At site 3, the bankful channel is clearly deeper, indicative of continued erosion and the banks are being undercut and there is evidence of collapse on the right bank, indicative of lateral erosion instrumental in the widening of the channel, and the creation of the flood plain.

Beyond site 3, riffles and pools can be clearly seen to develop, the first stage in meander development which subsequently appear due to the dominance of different processes.

Figure P4c indicates a clear difference in channel and bankful dimensions which would be important in formation of landforms and characteristics as much of the bedload, for example, would be moved only in more extreme conditions, and greater erosion would result.

The hydraulic radius indicates a more efficient stream generally nearest the source and especially at the first segment of the first site. This will result in the greatest vertical erosion at the base of the waterfall.

Velocity and discharge generally increase downstream giving the river the energy to erode by abrasion and attrition and this reduces the size of the load and increases the roundness.

The gradient reduces, encouraging a more sinuous course and ensuring near the source, relatively high speeds to compensate for limited volume of water but resulting in importance of vertical erosion.

Resources cited above can clearly be used interchangeably.

- Level 1** describes changes overall.
 Simplistic reference to processes of erosion, etc., and/or information in Fig. P4c without clearly identifying reasons. *(1-3 marks)*
- Level 2** begins to target response,
 an awareness of changes in channel landforms and/or characteristics which are sought to be explained
 uses evidence from Figures in support in an account which is organised. *(4-6 marks)*

Level 3

clear awareness of the demands of the question,
clear explanatory purpose which is done with reference to valid evidence
from sources suggested.

Reference is made to both landforms and characteristics and at least 2 of the
3 figures are used in support – likely to focus on processes and criteria, such
as HR, discharge related to energy.

(7-8 marks)

Max 8 marks

Question 4

- Level 1** Simple statements made with reference to objectives or overall aim. May focus more on some aspects than others, e.g. characteristics of component rather than reasoning and be imbalanced. May jump about and be poorly structured. No reference to own fieldwork experiences. Lacks awareness of limitations or may refer to limitations only and neglect to summarise findings. **1-3 marks**
- Level 2** Some developments of statements. Refers to all objectives (perhaps in varying detail) and in appropriate order or clear reference to aim/title. May make intermittent reference to evidence or refer in generalised way. Will show some awareness of reliability of findings and limitations and will show their own experience of conducting an enquiry by drawing on own experience. If good on either summary or limitations but no reference to other element, max 5. No explicit reference to own fieldwork – max 7. **4-7 marks**
- Level 3** As Level 2, but will refer precisely and specifically to data collected as evidence. Will be clearly aware of limitations. Will realise extent to which aims/objectives have been realised. Will be critically evaluative of enquiry. May suggest meaningful extensions of study. Will clearly be applying own experiences of fieldwork and enquiry. **8-10 marks**

Question 5

- (a) Hypotheses etc. can be derived directly from photograph or suggested/IMPLIED by them.

Eg. **photograph 7** - riffles are, as textbooks predict, areas of shallower water, with more turbulent flow and larger bedload than pools

Riffles occur at equal intervals downstream;

Riffles occur at about six times the channel width

Could refer to other aspects of load

eg. **photograph 8**, does the meander fit the textbook description?

ie. with deepest water and steeper bank on outside bank and shallowest water and gentler bank on the inside bend, giving rise to an asymmetrical cross profile,

are pools found on outside bend?

is meander wavelength 6-10 times the channel width?

There are many possibilities and only a few are illustrated above.

Do not need all elements of one hypothesis/of above to access 2 marks.

Clear, specific, targeted, directional hypothesis – 2 marks

Simple, general, open and valid hypothesis – 1 mark

Any combination up to 4 marks (ie 2+2).

Justification of extension – focus has been on earlier stages of river, prior to meander formation and floodplain development; as river progresses downstream such features likely to become predominant according to Figure P1 and so logical sequence to continue;

Some consideration of cross profile can determine whether cross profile is different along a meandering to a straight section; and general points also valid to further consider validity of specific model/textbook predictions does reality bear out theory? 1 mark per undeveloped point; 1+1 per developed point. Any combination up to 4 marks.

NB Must justify a valid hypothesis which is seeking to extend the enquiry (by broadening eg meanders or deepening eg cross-section).

- (b) Any valid method – likely to focus on floats, flowmeter and possibly conductivity meter.
Marks available for:- equipment used and a description (d ✓) of its use

(d ✓)

- identification of where measurements would be carried out relating to measuring out section on the long profile, positioning on cross profile and depth when relevant to method;
- description of process of measuring velocity – eg. float placed upstream of start point, time passed marker recorded etc.

Allow up to 3 marks for any of sub sections above, up to a maximum of 6 marks for method description.

Justification (j ✓) of method may relate to strengths of method selected, or weaknesses of those rejected or a combination of both.

Eg. if **float method selected** may be justified in terms of

(j ✓)

Strengths access to cheap equipment, oranges, conkers etc.
Will measure even slow moving water
Correction can be applied to measurement of slower surface velocity
(x 0.80) to achieve flow which is faster below surface and more
representative of average velocity.

Whilst impeller needs certain depth to allow measurement – it is too
shallow, no recording can be made;
tendency for impeller to get stuck, therefore reducing accuracy. Requires
more elaborate equation to translate into speed – greater likelihood of error.

General points permissible eg Safety may appear – no need to go in water with float
method if too deep/too fast, providing float biodegradable. General points permissible

Response must be in context of justifying method selected, not indiscriminately
reviewing alternative methods.

1 mark per basic, underdeveloped point; 1+1 per developed point
Allow up to 6 marks for justification.

(8 marks)