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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Geography GGA7
Specification A

GGA7 Fieldwork Investigation Written Unit

Mark Scheme

2006 examination - January series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

General Guidance for A Level Geography Assistant 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) Figure P1a shows expected temperature profile where a heat island is apparent.

Temperatures are clearly highest in centre – coinciding with high density and multi-storey buildings in CBD.

They decline outwards – but not gradually.

Initial steep decline and stepped decline – almost 'cliff' line – at edge of city.

Shows impact of open land to east where temperatures drop where there is a park.

Figure P1a is clearly predicting what should happen in Carlisle and that is its usefulness in providing the starting point in determining whether Carlisle fits the model; to what extent it fits the model, and clearly suggests the importance of distance from the CBD and different land uses which are objectives 1 and 2.

Level 1	Describes Figure P1a. Is aware of objectives. No reference to own fieldwork.	
		(1 mark)
Level 2	Links Figure P1a to objectives. Describes Figure P1a purposefully in the context of objectives. Realises Figure P1a is a base for comparison – and whether Carlisle fits. Implicit reference to own fieldwork or explicit but token reference to own fieldwork.	
		(2-3 marks)
Level 3	Purposeful link between Figure P1a and objectives. Clear focused description of Figure P1a related to purpose. Realises that Figure P1a acts as a starting point and extent to which Carlisle fits can be determined. Explicit meaningful reference to own fieldwork e.g., when I visited A, model of temperature change predicted…...	
		(4 marks)

(b) Chester has a similar population total and clearly exhibits characteristics of a heat island (1) so Carlisle may also be expected to display such characteristics (1).

Figure P1b also shows variation in height in Chester (1) which Carlisle also has … up to approx. 50m (1) and appears to suggest higher areas are warmer (1) … reference to objective 3. SW/NE transect (1) – relative position of Chester and Carlisle and annotation of both transects (1).

2 x 1: 1 x (1 + 1)

(2 marks)

Question 2

(a) Quick/easy/straightforward .. basic idea – 1 mark

Piloted – so equipment pre-tested (1) and results/accuracy should be more certain/increase as a practice run has been done (1).

Location of both thermometers kept constant (1) – to increase comparability/a fair test (1).
Timing – between 4-5 p.m. should be relatively hot .. late afternoon (1) so difference perhaps clearer (1) … and relates to Figure P1a (1).

Weather conditions on different days were the same to allow temperature figures to be comparable (1).
Accuracy of equipment e.g digital thermometer (1)

Both methods accurate to one decimal point, again increasing accuracy (1)
Use of two methods and average derived should increase confidence in result (1).
Allow up to 3 marks for reference to own fieldwork.

6 x 1: 3 x (1+1) any combination

Max. 6 marks

(b) Sample size – 36 – relatively large sample size (1) which should increase reliability of results (1). ✓s
Frequency – supposed to be every half mile but clearly shows some variation even along transects (1) e.g. sites 21-24 clearly not equidistant (1) therefore systematic approach/even coverage reduced as interval varies (1). ✓f
So some land uses omitted (1).
Distribution/areas – is very uneven (1). ✓d
Choice of transects on main road clearly leads to many sites here (1) and exclusion of large areas of housing and other land uses along other road types (1).
Clustering of points in certain areas, e.g. around CBD (1) and also Denton Holme where additional points included arbitrarily (1) without a proper sampling strategy (1).
Allow up to 3 marks for reference to own fieldwork.
1 mark minimum for each subsection.

6 x 1; 3 x (1+1) – any combination.

Max. 6 marks

(c) Any valid secondary source.
Likely one – synoptic charts/weather maps/weather forecasts etc (1)
Justification – gives / specific weather conditions overall (1) √j
at time of data collection (1)
so will aid in understanding of microclimatic characteristic of temperature (1)
e.g. were weather conditions as perceived? calm as suggested by enquiry or light winds? (1)
was clear skies – completely clear or some cloud? (1)
Allow 2 for reference to own fieldwork.

(4 marks)

Question 3

(a)(i) 2 marks for inserting 15.75 isotherm (1 for northern side, 1 for southern side)
4 marks for completing 15.25 isotherm (1+1 for each part)
2 marks for completing/adding 14.75 isotherm.
(see attached Figure 1).

(4 marks)

(a)(ii) Overall, temperatures are higher in more central areas and appear to reduce outwards.
Evidence should be offered in support of this statement (f = evidence for)
e.g. site 13 versus fringe site/sites.
There is a relatively rapid reduction in temperature as predicted by Figure P1a – to the west of study site 13.
Similarly on the edge to the west near site 1-3, temperatures reduce relatively quickly as predicted. Steps can clearly be seen as distance between isotherms vary –
e.g. southwest of study site 13.
However, whilst there is evidence to support predictions of Figure P1a, there is also evidence to refute it. (a = evidence against)
The 15.75 isotherm is elongated away from centre of CBD along main road and this is repeated to south west.
The pattern to the north is very different from the south where temperatures are overall cooler and the speed of change slower.
Temperatures are relatively low near the river and open areas around it.
(This could be used for or against Figure P1a.)
There is not a dramatic reduction in temperature as rural area is reached in the south and indeed, a sector pattern can be seen at times whereas Figure P1a might be seen to anticipate a much clearer cut change with distance.

Level 1	Describes Figure 1. TWE = To what extent. Is aware of prediction of Figure P1a. Some reference to evidence – perhaps generalised.	
		(1-3 marks)
Level 2	Targets description to question. Specific use of evidence which supports expected changes and some awareness of this being balanced by evidence against it and some comment present …tentative/implicit	
		(4-6 marks)
Level 3	Purposeful description of Figure 1. Evidence used to support expected changes, but also against. Clear comment/assessment of extent which recognises limitations.	
		(7–8 marks)

Max. 8 marks.

(a) (iii) 2 x (1+1) for correctly identifying each coordinate.
Study sites need numbering or maximum 3.

(4 marks)

(a) (iv) There will be a relationship between distance from the centre and temperature (1) +1 if weak relationship specified.
As distance increases, temperature decreases (2).

(2 marks)

(a) (v) 1 for completion of Rank for Study site 16 - 30

1 for completion of d and d^2 for Study site 16 – 6/36

1 for completion of third part of working $1 - \left[\frac{59472}{46620}\right]$

1 for penultimate line (1 – 1. 276) or (1 – 1.275)
1 for final value - 0.276 or -0.275/- 0.28

(3 marks)

(a) (vi) Value of -0.276 is less than 0.282 which is critical value at 0.05 level (1).
Therefore we can be less than 95% certain of a relationship / expected hypothesis rejected / null hypothesis accepted (1).
However, value is only a little below, so there is clearly a link … but below expected confidence level (1).

This is borne out by Figure 2 which indicates an overall trend of reducing temperatures with distance (1) +1 for valid evidence, but bands where similar temperatures at different distances – e.g. 15.4 – 675m and 15.5 at 3000m (1).
Some anomalies are clearly present, e.g. 33.8 where temperature lower and higher than would be expected (1).
Minimum 1 mark for noting limited nature of link ✓l
1 mark for noting/providing evidence of link ✓f
and 1 mark for noting evidence against link ✓a.

6 x 1, 3 x 1+1, any combination.

(6 marks)

(b) (i) Any valid characteristic and an awareness of its impact on temperature (1).
Relatively high density of buildings will increase temperature (1)
Heat/air conditioning will add to temperature (1)
Relatively high population density will have some effect (1)
Buildings only 2/3 storeys – so this will tend to reduce impact (1)
Layout is relatively spacious and area clearly pedestrianised
so no traffic reducing potential temperature (1)
Any valid label – 1 per undeveloped part, 1+1 if developed.
Labels must clearly point to features identified.

(5 marks)

(b) (ii) 3 x 1 for adding bars in correct sequence and length.
The key should be adhered to, otherwise maximum 2.

(3 marks)

(b) (iii) Land use impact – temperatures are generally higher in CBD and areas of terraced housing – study sites 7, 8, 17, 18. Here there is evidence to support this, but it is not clear cut, as in some locations where terraced houses are present, temperatures are relatively lower, e.g. site 19, even though appear similar to photographs of other study sites.
Lowest temperatures are in areas of open space/fields – temperatures relatively low in north where less built up – e.g. site 25 where hotel and retail park … buildings clearly well spaced, similarly with park at site 31 and fields at site 1.
However, again, there is some conflicting evidence, where temperature relatively high where there is open space at site 20.

Environmental characteristics.
Positive scores are generally present in central and inner areas and coincide with relatively higher temperatures – clearly apparent around site 13-14, 11, 18, 19, which also links to land use of CBD and terraced housing. Again, there are exceptions – which are similar to land use – site 20 – negative scores on density and sense of space with only traffic positive. Generally the negative scores correspond to lower temperatures – such as peripheral sites 21, 1, 6. Again, there are exceptions, such as 15, which also appear to show some pattern as land use. Temperatures do decrease by site 15, but relatively high in contrast to some peripheral sites.

N.B. There are many ways of interpreting/linking wide variety/amount of data.

Level 1	Describes land use using P6. Describes environmental characteristics from Figure 5. May describe temperature change.	
		(1-4 marks)
Level 2	Begins to realise the links between temperature and either land use or environmental characteristics. Will be clear on one at top of level. Uses some evidence in support, likely to be piecemeal. Points may not be clearly summarised, but will be there.	
		(5-7 marks)
Level 3	Clearly perceives links between temperature and land uses and environmental characteristics. May be imbalance between the two. Will use evidence in support – in a clear and convincing way. Will have overview supported by examples. Impact will be clearly summarised and links between both criteria and temperatures may be perceived.	
		(8-10 marks)

Max 10 marks

(c) Relief relates to both height and shape of the land, so both elements should be referred to. Height – in southern area, highest land on edge - .48 near site 7 – and approx. 50m near site 15 – here temperatures are relatively lower. This would be what would be expected … with lower areas warmer, e.g. near bridges – site 5/20. However, this is not clear cut as site 31 is less than 20m but is one of the coolest sites. It could be argued that although site 15 is cooler than lower areas north e.g. 17,13, it is warmer than site 31 and 33, which are both low lying. Thus, evidence is inconclusive.

Shape – it appears that the lower parts of the valley have generally the cooler temperatures – study sites 31-33, but on northern edge of site 25 away from river and on rising land, temperature is even lower. Again, evidence is inconclusive and there is no clear link with relief. As before, there are many ways in which the evidence can be used.

Assessment – should note some links and note the tenuous nature of them but should also perceive relative greater importance of other factors such as the extent of the built-up area where greater in south temperatures generally higher. Similarly – along main roads where traffic/building density near centre is higher, i.e. relative importance of land use and environmental criteria. May refer to limited link with distance.

Level 1	Describes height aspect of relief. Seeks to make link between relief and temperature. Evidence is generalised.	
		(1-4 marks)
Level 2	Makes link clearly between temperature and relief. May refer to shape. Some specific use of evidence. Tentative assessment or perhaps clear assessment in context of relief only. Some specific use of evidence, likely to be piecemeal.	
		(5-7 marks)
Level 3	Perceives importance of river valley so moves onto shape. Clear awareness of links between relief and temperature. Evidence is offered in support which is specific – overview with illustrations.. Evidence also which may question importance. Begins to consider other factors and this is apparent in evaluation.	
		(8-10 marks)

10 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/improvements/extensions 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/improvements/extensions. 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 aim/objectives have been realised. Will be critically evaluative of enquiry. Will suggest meaningful improvements/extensions of study. Will clearly be applying own experiences of fieldwork and enquiry.	
		(8-10 marks)

Question 5

(a) Any valid aspect identified …
e.g. pollution/air quality.

✓o Objective – To determine whether air quality varies with distance from CBD (1) or could be more precise… and specify the direction of the relationship … air quality would increase with increasing distance from CBD (2).

✓j Justification – should relate to limited coverage of climatic changes in urban area – only heat covered (1) and the need to investigate links (1), e.g. is pollution highest where temperature highest (1) … impact of sunlight (1).

✓t Theoretical background – may relate to conditions encouraging photochemical smog formation (1) concentration of CBD with traffic (1) + up to 3 for detail.

Maximum 4, minimum 1 for each component.

6 x 1, 3 x (1+1) – any combination.

(6 marks)

(b) Item of primary data must be clearly noted.

May refer to where, when, in explaining how .. as long as it relates to aspect identified … allow any valid data item, e.g. particulates with pollution even if photochemical smog considered above. Any valid reference to equipment; frequency of sampling; type of sampling; step-by-step information on how data collected.

For pollution – could consider particulates, impact on vegetation. Carbon monoxide (CO) levels, lichen analyses.
1 mark per undeveloped point; 1 + 1 per elaborated point, any combination. *(7 marks)*