

Geography A

Advanced GCE **2686**

Investigative Skills

Mark Scheme for June 2010

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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.

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Specification Grid

- AO1 show knowledge of the specified content
 AO2 show critical understanding of the specified content
 AO3 apply knowledge and critical understanding of unfamiliar contexts
 AO4 select and use a variety of skills and techniques, including communication skills appropriate to geographical studies

Question 1	AO1	AO2	AO3	AO4	TOTAL
a	2	0	3	0	5
b(i)	0	3	2	5	10
(ii)	2	3	3	7	15
(iii)	2	4	3	6	15
total	6	10	11	18	45
Question 2					
a(i)	2	0	3	0	5
(ii)	0	3	2	5	10
(iii)	2	3	3	7	15
b	2	3	2	8	15
total	6	9	10	20	45
Question 3					
a(i)	2	0	3	0	5
(ii)	0	3	2	5	10
(iii)	2	3	2	8	15
b	2	4	3	6	15
total	6	10	10	19	45

Overall Assessment Criteria

LEVEL	MAX 20 MARKS	MAX 15 MARKS	MAX 10 MARKS	MAX 5 MARKS
3	16-20	12-15	8-10	
2	9-15	7-11	5-7	4-5
1	0-8	0-6	0-4	0-3

- 1 The assessment levels and mark ranges used on this paper are as follows:

Level	Max 15 marks	Max 10 marks	Max 5 marks
3	12-15	8-10	
2	7-11	5-7	4-5
1	0-6	0-4	0-3

- 2 Each question will be level marked using generic descriptors with clarification on the specific content requirements given on a question-by-question basis.
- 3 The generic descriptors are given below. Please use these in conjunction with the main mark scheme document.
- 4 There are clear progressions in the standards expected:

	Level 1	Level 2	Level 3
Key words	Basic Little or no Lacks substance Limited	Sound Reasonable Present Some	Clear Good Effective Developed Clearly presented

Level marking**LEVEL 3****Candidates show:**

- Good knowledge of sources of information and have a clear sense of place and location, where relevant.
- Their knowledge is applied appropriately to familiar and unfamiliar geographical contexts. Candidates display skill in interpreting a range of sources of spatial and/or temporal geographical information where appropriate.
- They identify appropriate geographical questions in a range of contexts and formulate effective approaches to enquiry.
- Candidates demonstrate application of a range of skills and techniques to present and analyse the data.
- Where relevant, the candidate shows a wide knowledge of primary and secondary data sources.
- Conclusions are reasoned, with the outcomes and methods being evaluated.
- The limitations of the investigation are recognised.
- The work follows a logical and coherent structure with geographical terms used confidently.
- Spelling, grammar and punctuation are accurate.

LEVEL 2**Candidates demonstrate:**

- A sound knowledge of appropriate techniques and understanding of the nature of geographical investigation.
- There is a sense of location and place.
- Geographical questions are formulated with reasonable effectiveness with some application of techniques to familiar and unfamiliar geographical contexts.
- Some skill is shown in the interpretation of spatial and/or temporal geographical information.
- Knowledge is applied to reach some valid conclusions and candidates are able to comment upon the effectiveness of their methodology and the validity of the outcome.
- Written answers are structured and spelling, punctuation and grammar are used with reasonable accuracy.
- A range of geographical terms are used.

LEVEL 1**Candidates show:**

- A basic knowledge of the nature of geographical enquiry and of the techniques specified.
- Explanation and understanding of skills required in geographical investigation are limited.
- Candidates can identify basic relevant geographical questions when presented with familiar contexts and can suggest and adopt approaches to enquiry.
- Basic techniques are used with a limited range of methods to present and analyse evidence.
- Candidates are able to reach simple conclusions and identify strengths and weaknesses of their enquiries.
- Written work is poorly structured often with inaccurate spelling, punctuation and grammar.
- Basic and sometimes inaccurate use of geographical terms.

- 1 (a) Study the 1:50 000 O.S. Map extract of part of Pembrokeshire, an area in which an 'A' level geographical investigation is to be undertaken.

With specific reference to the map extract, outline and justify an appropriate question or hypothesis for investigation. [5]

Indicative content:

There is a range of potential enquiries based upon

- River studies and coastal studies
- Slope studies
- Settlement issues / tourism studies
- Woodland ecology / micro climates
- Transport studies / urban structures and investigations
- Service provision

Level marking:

Level 2 (4-5)

A clear and appropriate question or hypothesis based upon the map that could be carried out in an appropriate time scale. It must be justified by including G.R.s on map / named places/ purpose of study linked to map. Some mention of underlying theory will be a top level 2 indicator.

Level 1 (0-3)

A basic or less appropriate question based upon the map extract lacking justification or a realistic time frame. Top level 1 may have names and GRs.

- (b) (i) Describe and justify a sampling strategy that could be employed in the investigation outlined in part (a). [10]

Indicative content:

- Clear statement of appropriate strategy.
- Candidates should establish a clear link between the strategy and the question/hypothesis. More able candidates will give specific details related to sites and distances on the map.
- When stratified sampling is identified then the sub-sets should be clearly demarcated.
- Sampling intervals should be determined and explained
- I expect that the method employed would mirror the range of data collected.
- Methods should be practical, feasible and safe.

Level marking:

Level 3 (8-10)

A **detailed** understanding and grasp of the necessary technique. Appropriate types of sampling will be included. Both description and justification needed with specific reference to the map.

Level 2 (5-7)

Answer dominated by either **clear** description or justification. Less reference to the map and an unconvincing grasp of sampling methodology.

Level 1 (0-4)

An unbalanced **basic** answer with little understanding nor reference to the map.

All description and little / no justification.

- (ii) **Describe and justify preparations necessary before starting a geographical investigation.** [15]

Indicative content:

Possible answers may include

- Background reading
- Risk assessment / weather impacts
- Access issues
- Time scale
- Pilot investigation might be appropriate
- Techniques employed
- Specificity would be expected
- Transport provisions
- Appropriate clothing
- Medical
- Accommodation booked.

This is really about what the candidates do prior to the investigation. Allow two variations on a similar theme to reach level three.

Level Marking:

Level 3 (12-15)

A **detailed** wide ranging answer having three or more of the listed ideas well explained.

Level 2 (7-11)

Answer dominated by either **clear** description or justification. Will have two or more **clear** ideas but it will lack detail and reference to the task about to be undertaken.

Level 1 (0-6)

An unbalanced **basic** answer with little understanding nor reference to the map.

All description and little/no justification.

- (iii) **Explain the use of data sources that might be used in this investigation.** [15]

Indicative content:

Enormous amount of information available

- Text books
- Previous student work
- Published data in magazines and periodicals
- Public offices/ libraries etc
- Maps
- Census data
- Internet sources
- Companies, agencies and government departments.

Data must form an integral part of the investigation.

Only use information that the writer understands.

It must help the understanding of the reader.

Level Marking:**Level 3 (12-15)**

A good balance between clear statements and explanation. Some discursive content.

Detailed links established to the enquiry

Place names and map references could be included ...top L3 indicator.

Level 2 (7-11)

Answer dominated by description rather than explanation. Less reference to the map and an unconvincing grasp of why secondary data is needed and its use.

Level 1 (0-6)

An unbalanced **basic** answer with little understanding nor reference to the map.

All description and little / no explanation.

- 2 (a) Study Fig. 1, which shows census data by parish in Upper Wensleydale, for 1991 and 2001.

- (i) Identify TWO other items of census information and suggest how these might be useful in an investigation into population change. [5]

Indicative content:

- Census data
- Parish records
- Registry office
- Text books
- Academic research.

Level Marking:

Level 2 (4-5)

Clear description. Either one source outlined in detail OR two or more with some detail.

Level 1 (0-3)

A basic answer lacking in detail or depth of description.

- (ii) Suggest an appropriate method of mapping population change in Upper Wensleydale based on the data in Fig. 1 and outline its merits and limitations. [10]

Indicative content:

- Dot maps effectiveness depends upon:
 1. area boundaries on map
 2. define the data to be shown
 3. decide upon dot value – high enough to avoid overcrowding but low enough to avoid too many empty areas
 4. decide on dot size – not too large and not merge
 5. dot location vital – false impressions of the distribution
- Isoline maps ineffective in this case
 1. plot points
 2. isoline interval
 3. personal judgement needed
 4. show gradual spatial changes
- Choropleth maps
 1. base map with clear unit boundaries
 2. find data range and decide scale
 3. shading light to dark
 4. ensure clear key
- Proportional symbols in each parish with a well argued scale and clear methodology.
- Placed graphs with appropriate scales.

Level 3 response may conclude that the patterns for dot and choropleth map could vary as dot map uses actual figures and choropleth uses standardised data.

Level Marking:**Level 3 (8-10)**

A **detailed** evaluation of the method. Both merits and limitations should be included. Links to field work exemplars may be applicable. Reference to the data provided should be expected.

Level 2 (5-7)

A **clear** evaluation of the method with some detail and understanding shown. Some discursive content will move candidate towards top of level. There may be more description regarding how the maps are drawn and an opinion as to why this is the best method.

Level 1 (0-4)

A **basic** evaluation of the method with some detail and little on the merits and problems.

- (iii) **Describe the advantages and disadvantages of measures of dispersion that could be used to describe data such as that in Fig. 1.** [15]

Indicative content:

- A clear statement of some of the likely advantages and disadvantages linked closely to the table given
- A more manageable form of summary
- Mean is more useful with a standard deviation
- Median should have an inter quartile range
- Modal grouping shows the most common set and is not affected by extremes
- Bi modal grouping.

Level Marking:**Level 3 (12-15)**

A **detailed** series of statements mentioning most of the data descriptions. Two / three well described, clearly presented, **justified** and effective with the extension elements like Standard Deviation and IQR.

As data in both tables is skewed there may be opportunity for candidates to discuss the relative merits of medians over means.

Level 2 (7-11)

A **clear** answer showing some understanding but lacking in detail. One or two well described points with some justification. Unlikely to mention SD or IQR.

Level 1 (0-6)

A very **basic** answer lacking specificity and justification.

- (b) **Assess the extent to which the appropriate choice of location and scale determines the effectiveness of geographical investigations.** [15]

Indicative content:

- An appreciation of the importance of scale.
- A location will need to be introduced.
- An appropriate scale will achieve meaningful results.
- The need for a realistic scale of study at A2 given limited time resources.
- Scale could also be interpreted as a type of measurement eg ordinal, nominal and ratio.
- This will control the data analysis techniques employed.

Level Marking:

Level 3 (12-15)

A **detailed** evaluation of both location and scale.

Higher level answers will deal fully with the scale issues in the context of both data collection and analysis. There will be a range of examples to illustrate the answer eg downstream changes in river characteristics.

Beach transects and sediment sorting.

Named examples and links to field work will be a L3 indicator.

Good discursive content with an opinion expressed.

Level 2 (7-11)

A **clear** evaluation of both scale and location with some detail and understanding shown. Some discursive content will move candidate towards top of level.

An answer that mainly concentrates on one aspect well will be Mid L2. A number of examples will illustrate the answer. It will have an explanatory element.

There may be more description regarding how location and scale can determine success.

Level 1 (0-6)

A **basic** evaluation shown. Any methods will be thin on content and applicability.

Candidates will talk in general terms about map scales and time scales.

Few, if any evaluations or limitations and no opinion offered.

- 3 (a) Study Fig. 2, which shows changes in cross-sectional channel area downstream

- (i) Suggest and justify a suitable hypothesis for this data. [5]

Indicative content:

A valid hypothesis or question which seems a logical development of the data provided

Level Marking:

Level 2 (4-5)

A clear and appropriate question or hypothesis which must be justified.

Level 1 (0-3)

A less clear statement which lacks justification.

- (ii) With the aid of an appropriate diagram, describe and justify how you would represent the relationship between distance and cross-sectional area. [10]

Indicative content:

- Clarity
- Effectiveness in showing trends and patterns
- Recovery of information
- Ease of construction
- Range of data
- Appropriate scales on the graph

Need to look at scatter graph

Level Marking:

Level 3 (8-10)

A **detailed** series of statements mentioning most of the data descriptions.

Graph should be clearly labelled

Best fit line and / or regression analysis L3 indicator.

Level 2 (5-7)

A **clear** answer showing some understanding but lacking in detail. May have a best fit line for top L2 which lacks accuracy.

Level 1 (0-4)

A very **basic** answer missing key aspects of indicative content.

- (iii) Describe and justify ONE statistical test you could use to investigate the relationship between distance and cross-sectional area. [15]

Indicative content:

Spearman rank or Pearson's Product Moment are on the Specification.
Both are appropriate though only one is needed.
A brief outline of the methodology may be included.
Correlation measures the association between pairs of values in a data set.
It gives a precise measure of association between +1 and -1. A convincing understanding of the calculation and/or use of confidence levels will be a clear Level 3 indicator.

There are enough pairs to make this test statistically significant.

Level 3 (12-15)

A **clear** understanding of the statistical process
A clear balance of description and explanation
The correct use of the appropriate statistical test
Effective understanding of the data analysis
Clearly presented with an understanding of the impact of the statistical analysis
detailed
Confidence levels will be a L3 indicator.

Level 2 (7-11)

A **sound** understanding of the need for statistical analysis.
Some balance between description and justification.
An appropriate statistical test but it will be more of a menu.
A reasonable understanding of the correlation technique
Some understanding of the impacts of stats testing.

Level 1 (0-6)

A **limited** understanding of detail.
Little / no understanding of correlation techniques
Basic understanding with poor balance of description and justification.

(b) To what extent is evaluation necessary in geographical investigations? [15]

Indicative content:

- Need to complete the circle
- Evaluate methods and data collected
- Evaluate data analysis
- Evaluate conclusions reached with reference to the original question or hypothesis
- Is there a need to re-visit any aspect of the enquiry?
- How valid are the conclusions reached.
- What could be done to improve things next time

Level 3 (12-15)

A **detailed** evaluation of both of all three parts of the evaluation OR two done very well. Links to field work exemplars may be applicable. Good discursive content with an opinion about the vital role of evaluation in an enquiry.

Level 2 (7-11)

A **clear** evaluation of at least two of the parts. Some discursive content will move candidate towards top of level. There may be more description and an opinion as to the how useful evaluation is may be offered.

Level 1 (0-6)

A **basic** evaluation shown. Any ideas will be thin on content and applicability. One area may be dealt with. Few, if any evaluations or limitations and no opinion offered.

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