

GCE AS
Geography
January 2009

Mark Schemes

Issued: April 2009

**NORTHERN IRELAND GENERAL CERTIFICATE OF SECONDARY EDUCATION (GCSE)
AND NORTHERN IRELAND GENERAL CERTIFICATE OF EDUCATION (GCE)**

MARK SCHEMES (2009)

Foreword

Introduction

Mark Schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes

Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of 16- and 18-year-old students in schools and colleges. The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes therefore are regarded as a part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

The Council hopes that the mark schemes will be viewed and used in a constructive way as a further support to the teaching and learning processes.

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Rewarding Learning

ADVANCED SUBSIDIARY (AS)

General Certificate of Education

January 2009

Geography

Assessment Unit AS 1

assessing

Module 1: Themes in Physical Geography

[ASG11]

MONDAY 26 JANUARY, AFTERNOON

**MARK
SCHEME**

Introductory Remarks

Note that the assessment objectives (AOs) for this specification are more extensive than those for the previous syllabus. There are now four AOs, and the style of questions and the requirements of the mark scheme have had to be modified somewhat to take account of them, particularly AO2 and AO3 with their need for “critical understanding”. It is worth reproducing the AOs here:

- AO1 Show knowledge of the specified content;
- AO2 Show critical understanding of the specified content;
- AO3 Apply knowledge and critical understanding to unfamiliar contexts;
- AO4 Select and use a variety of skills and techniques, including communicative skills, appropriate to geographical studies.

General Instructions for Markers

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Markers are advised that there is no correlation between length and quality of response. Candidates may provide a very concise answer that fully addresses the requirements of the question and is therefore worthy of full or almost full marks. Alternatively, a candidate may provide a very long answer which also addresses the requirements of the question and is equally worthy of full or almost full marks. It is important, therefore, not to be influenced by the length of the candidate’s response but rather by the extent to which the requirements of the mark scheme have been met.

Some candidates may present answers in writing that is difficult to read. Markers should take the time to establish what points are being expressed before deciding on a mark allocation. However, candidates should present answers which are legible and markers should not spend a disproportionate amount of time trying to decipher writing that is illegible.

Levels of Response

For questions with an allocation of six or more marks three levels of response will be provided to help guide the marking process. General descriptions of the criteria governing levels of response mark schemes are set out on the next page. When deciding about the level of a response, a “best fit” approach should be taken. It will not be necessary for a response to meet the requirements of all the criteria within any given level for that level to be awarded. For example, a Level 3 response does not require all of the possible knowledge and understanding which might be realistically expected from an AS or AL candidate to be present in the answer.

Having decided what the level is, it is then important that a mark from within the range for that level, which accurately reflects the value of the candidate’s answer, is awarded.

Knowledge and Understanding	Skills	Quality of Written Communication	Level
<p>The candidate will show a wide-ranging and accurate knowledge and a clear understanding of the concepts/ideas relevant to the question. All or most of the knowledge and understanding that can be expected is given.</p>	<p>The candidate will display a high level of ability through insightful analysis and interpretation of the resource material with little or no gaps, errors or misapprehensions. All that is significant is extracted from the resource material.</p>	<p>The candidate will express complex subject matter using an appropriate form and style of writing. Material included in the answers will be relevant and clearly organised. It will involve the use of specialist vocabulary and be written legibly and with few, if any, errors in spelling, grammar and punctuation.</p>	3
<p>The candidate will display an adequate to good knowledge and understanding of many of the relevant concepts/ ideas. Much of the body of knowledge that can be reasonably expected is given.</p>	<p>The candidate will display evidence of the ability to analyse and interpret the resource material but gaps, errors and/or misapprehensions may be in evidence.</p>	<p>The candidate will express ideas using an appropriate form and style of writing. Material included will be relevant and organised but arguments may stray from the main point. Some specialist terms will be used and there may be occasional errors in spelling, grammar and punctuation. Legibility is satisfactory.</p>	2
<p>The candidate will display some accurate knowledge and understanding but alongside errors and significant gaps. The relevance of the information to the question may be tenuous.</p>	<p>The candidate will be able to show only limited ability to analyse and interpret the resource material and gaps, errors and/or misapprehensions will be clearly evidenced.</p>	<p>The candidate will have a form and style of writing which is not fluent. Only relatively simple ideas can be dealt with competently. Material included may have dubious relevance. There will be noticeable errors in spelling, grammar and punctuation. Writing may be illegible in places.</p>	1

Section A

AVAILABLE
MARKS

- 1 (a) The drainage basin is an open system as there are inputs and outputs of both energy and matter. Candidates may give examples but this is not required for maximum marks. [2]
- (b) (i) Discharge is the amount of water passing a particular point on the course of a river (gauging station) per second. This is the velocity of the river, measured in metres per second, multiplied by the cross-sectional area of the area, measured in square metres. This gives the volume in cu.m sec or cumecs. (Units or how calculated for [2]) [2]
- (ii) Discharge is 183 cumecs (allow 181 to 185). Units must be given. Month is February. Both have to be correct to achieve the mark. [1]
- (iii) The river discharge rises during January from 126 cumecs to peak in February at 183 cumecs. It then falls sharply to May (18 cumecs) and gently to a minimum in August (7 cumecs). It then rises to 26 cumecs in December.
The river's discharge broadly follows the pattern of precipitation for most of the year. However, the rainfall in July and August was very low (drought conditions) and the relatively high September rainfall was not followed by a rapid rise in discharge. This was because most of the rain percolated into the very dry ground and did not flow overland. [5]
- (c) Solution is a process of erosion where soluble minerals, such as calcium carbonate in limestones, are dissolved into river water, which is slightly acidic. There must be the concept of "dissolved" to be rewarded.
Saltation is a process of transportation where small particles of the load are moved downstream in a series of "hopping" movements. ("Hopping" etc. is necessary.) [2]
- 2 (a) Candidates should describe the plants present in the area and make reference to the time scale. The explanation should refer to the changing conditions over time due to soil depth, humus content, nutrients etc., which provide conditions for a continued increase in the biomass/complexity of plants. [4]
- (b) (i) 1 Candidates should draw a downward pointing arrow on or beside the soil profile and label it "**soil water movement**".
- 2 The "**zone of calcareous nodules**" would generally be located in the A₂/B zone. [2]
- (ii) Links to natural vegetation could include; the plentiful supply of mull humus from the thick grass cover, the effective recycling of nutrients as the grasses take up and return nutrients to the soil, the extensive root systems of the grasses which gives a deep (up to 1 metre) dark brown/black A horizon etc.

12

Links to climate could include; the slight leaching due to late spring snowmelt and early summer storms, the capillary moisture movement in the hot summers which causes calcium carbonate nodules to be deposited at the A/B boundary or the upper C horizon (if there is no clear B horizon) etc.

For each of their chosen characteristics, candidates explain its links to climate/natural vegetation.

No reward for answers on other soil types.

[2] + [2] = [4] [4]

- (iii) There are many possible answers which would include overcultivation, monoculture, deep ploughing, over grazing etc. For their named cause, the candidates should explain clearly the process which leads to the soil being eroded. [2]

12

- 3 (a) (i) Since the Earth is neither warming up or cooling down, there must be a balance between incoming insolation and outgoing terrestrial radiation. As the resource shows between the equator and 37° north and south there is a net surplus and north and south of this there is a net deficit. Candidates should make reference to the resource in their explanation. [1] for resource reference; [1] for “balance” however expressed. [2]

- (ii) Ocean currents and wind systems (both upper and surface) move/redistribute heat away from the equatorial regions, where there is a surplus, to the colder areas of the northern and southern hemispheres. Candidates should name a heat transfer agent [1] and describe how it operates to transfer heat [1]. [2]

- (b) The dew point is the temperature to which a body of unsaturated air must be cooled to become saturated, i.e. achieve a relative humidity of 100%. [2]

- (c) (i) As the resource shows, hurricanes form over oceans in tropical areas. The one exception on the resource is in the W Pacific where the source area includes areas of ocean north of the Tropic of Cancer. Candidates should use the resource to describe the areas where hurricanes form. [2]

- (ii) Hurricanes form over warm tropical oceans where:
- sea temperatures exceed 26 °C (accept 27°C, as some books have this).
 - this temperature is present to depths of 50–70 m
 - there is low level convergence of air in the lower atmosphere
 - the Coriolis force is strong enough to cause rotation
 - there is rapid outflow of air in the upper atmosphere
- Accept any other valid reasons.
3 × [1] [3]

- (iii) Candidates should name a hurricane and give its source area. [1]

Section A

12

36

Section B

AVAILABLE
MARKS

Answer **any two** questions from this section.

- 4 The details of the answer will depend on the case study chosen. Candidates should name a large-scale drainage basin or delta and describe the effects of flooding on each of the three specific areas; people, property and the land. This might include deaths of people, disease, starvation, migration, damage to infrastructure/property, loss of crops, soil erosion, etc. Beneficial effects such as provision of soil nutrients, increases in fish breeding habitats, benefits to specific crops, etc. are just as relevant as detrimental ones. If one of people, property and land not mentioned at all maximum, Level 2.

Level 3 ([9]–[12])

The candidate produces an answer which focuses clearly on all three aspects of the question and includes good reference to case study material.

Level 2 ([5]–[8])

The candidate simply lists the effects but only describes one or two in detail. There is limited reference to case study material.

Level 1 ([1]–[4])

A weak answer by a candidate who fails to address the question or whose knowledge and understanding is limited. The quality of communication may also be poor. [12]

12

- 5 The details of the answer will depend on the case study chosen. Candidates should name a local scale ecosystem, which might be a lake, forest, dune system or peatland area. They should describe the physical characteristics of their chosen ecosystem. This might details of climate [temperature, rainfall, growing season], soils, geology, etc. They should give examples of plants and animals within the ecosystem and show clearly how these relate to the physical characteristics. If scale is inappropriate, Level 1.

Level 3 ([9]–[12])

The candidate produces a balanced answer which clearly describes the physical characteristics of the ecosystem and gives accurate examples of the biotic components within the ecosystem, by naming specific flora and fauna. They should also explain how these biotic components are related to the physical characteristics.

Level 2 ([5]–[8])

The case study is appropriate but the answer is limited in detail or depth or no specific ecosystem is named or the answer is unbalanced failing to give details of the biotic components of the ecosystem or failing to show how these are related to the physical characteristics.

Level 1 ([1]–[4])

The candidate shows little understanding of the physical characteristics of the ecosystem or how these are related to its biotic components. The quality of communication may also be poor. [12]

12

6 The answer requires candidates to describe and explain how anticyclonic conditions, in both winter and summer affect the human environment. Candidates should describe the basic weather conditions associated with anticyclones in both seasons. Winter anticyclones produce clear skies, little wind and very low temperatures. Temperature inversions and calm conditions are likely to produce fog. Frost may occur but snowfalls are unlikely as there is no uplift of air to cause condensation. Effects might include a wide range of consequences such as traffic problems, resulting from black ice/fog, asthma attacks due to photochemical smog, cancellation of sporting fixtures, disruption to travel, increases in hospital admissions due to hypothermia or falls on ice etc.

Summer anticyclones can produce heat wave conditions leading to drought. This would have effects on crop yields and therefore on some food prices. There might be water rationing/hosepipe bans. The weather conditions would increase local tourism and sales of products such as ice cream but also cases of sunburn. Insurance claims due to subsidence in areas of clay soils would rise sharply.

Level 3 ([9]–[12])

The candidate produces a balanced answer which describes and explains how the weather associated with both winter and summer anticyclones affects human environments. Case study material may be included but is not required for full marks.

Level 2 ([5]–[8])

A less detailed or unbalanced answer which may not clearly explain the weather conditions in anticyclones or which fails to give the effects on human environments for both winter and summer.

Level 1 ([1]–[4])

The candidate’s knowledge and understanding are both very limited. Explanation may not be clear and effects not well described. The quality of communication may also be poor.

[12]

12

Section B

24

Total

60

AVAILABLE
MARKS



Rewarding Learning

**ADVANCED SUBSIDIARY (AS)
General Certificate of Education
January 2009**

Geography

Assessment Unit AS 2

assessing

Module 2: Themes in Human Geography

[ASG21]

FRIDAY 23 JANUARY, AFTERNOON

**MARK
SCHEME**

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Section A

AVAILABLE
MARKS

- 1 (a) (i) The continents which will experience greatest growth are Asia and Africa. Areas of India will experience rates of growth in the region of 10 000 people plus. The continent which will experience greatest rates of decline is Europe. Large areas of Eastern Europe will experience rates of decline. [3] Figures must be quoted, max [2] if no figures given, but both areas of growth and decline noted. [3]
- (ii) Overpopulated means that there are too many people for the resources of the country to support. Resources are exceeded by people and the standard of living will fall [2]. [2]
- (b) All areas show an increase in total population numbers [1]. However, India is the only country that has experienced an increase in the proportion of world population. China and USA now have a smaller percentage of world population, despite growing total populations. [2] Figures must be quoted to gain full marks [1]. [4]
- (c) Any valid difference is acceptable but most will either discuss the wider base in LEDCs or the narrower top in LEDCs. They must have a clear difference in the actual shape of the pyramid [1]. They need to then explain the difference they have identified, most will use birth rates, death rates and life expectancy to do this. [2] [3]
- 2 (a) (i) DIFFERENCE: one model places land uses in concentric circles, the other in wedges developing from the centre. [1]
SIMILARITY: both have a Central Business District in the centre of their models. [1]
Accept other valid similarities or differences. [2]
- (ii) Their limitation must be specific to their chosen model. For example, if Burgess is discussed they may talk about the fact there is rarely such clear cut boundaries in reality. [2] Candidates who simply outline a model with no limitation will gain [0]. [2]
- (b) Sphere of influence is the *area* served by a particular settlement. It is the area that will be influenced by a settlement. [1] Simplistic or lacking definitions will gain. [1] Definition of range is not acceptable. [2]
- (c) Central Place Theory states that as settlement size increases they will decrease in frequency. For example, there will be less cities than there would be villages. It also states that as the size increases their sphere of influence increases. In other words there will be fewer larger settlements but they will have larger spheres of influence. [6]

12

12

Level 3 ([5]–[6])

A good answer that has addressed and understood all 3 elements of the question.

Level 2 ([3]–[4])

Still a good answer, but one element has inaccuracies or weaknesses, or is omitted.

Level 1 ([1]–[2])

Lacks understanding of the question and has serious errors.

- 3 (a) (i)** The areas with higher GDP figures tend to have higher life expectancy rates. The areas with lower GDP figures tend to have lower life expectancy rates. For example, the USA has a GDP of >20 thousand dollars per capita and a life expectancy of 75 – 79.9. Whereas most of Africa has a life expectancy of 50 – 50.9 or < 50 plus and GDP figures ranging from <5 to 5 – 10 thousand dollars per capita [3]. No figure given max [2].
Candidates who describe with no comparison, max [1]. [3]
- (ii)** Any valid social measure of development is acceptable [1]. No marks for those who give an economic measure. [1]
- (b) (i)** Colonialism is the control of one country over another. [2]
- (ii)** SOCIAL EFFECT: the loss of population numbers through the slave trade, development of infrastructure, etc [3].
ECONOMIC EFFECT: establishment of monoculture, closure of industries, etc. [3] Candidates will mostly discuss negative effects but positive effects are acceptable. Candidates who do not discuss their effect with reference to places are limited to [2] × 2. [6]

12

Section A

36

Section B

AVAILABLE
MARKS

- 4 Case study may be either a LEDC or MEDC. They must have a clear case study with details and depth of knowledge. There should be identifiable periods of time and a clear understanding of how the structure in each period changed. Candidates who focus on changes over space or population distribution will only achieve Level 1.

Level 3 ([9]–[12])

Candidate has an appropriate case study with details and depth of knowledge. They can describe using place and figures how the population structure of their case study has changed over time. They have identified clear time periods. They can offer reasons for the changes outlined.

Level 2 ([5]–[8])

Still a good answer but depth/detail is less than above. They have described a changing population structure but dates and figures are limited. Candidates who describe how birth rate and death rate in their case study have changed over time with no reference to population structure are restricted to this level.

Level 1 ([1]–[4])

A poor answer possibly lacking any case study details. Terminology and understanding is weak. Those discussing population distribution or changes over space are limited to this level.

12

- 5 Candidates should be able to discuss problems related to traffic and pedestrian movements and pollution of the urban atmosphere. Other problems such as crime and housing are also valid. Candidates who fail to mention any place for illustration should be marked sub optimally with maximum [6].

Level 3 ([9]–[12])

There is a clear understanding of the problems faced in urban environments. The candidate has discussed a range of issues (although these do not have to be balanced). There is depth of knowledge on the issues and place has been effectively used.

Level 2 ([5]–[8])

A good answer but discussing a limited range of issues or lacking in depth. Some reference to place is made but there may be some inaccuracies.

Level 1 ([1]–[4])

A poor answer that lacks knowledge related to the question. Terminology is weak.

12

- 6 Candidates need to discuss all three strands to the question – political, cultural and social, and it must be related to place.

POLITICAL: corruption of government officials may lead to misspending of money; war would hinder development because money would be spent on defence and on rebuilding the country after the war; poor development policies of the government may see one region grow at the expense of the other.

CULTURAL: the role of women in society- when women are viewed as second class citizens they are not given the same opportunities as men for education of work. This eliminates half the workforce in particular countries; religion can affect development because some religions would discourage the use of contraception and any methods aimed at reducing family size, this would lead to growing populations and create more people to provide for.

SOCIAL FACTORS: high birth rates will mean expanding populations and more people to provide for, more food, housing and jobs needed.
Candidates who fail to address place at all will be marked sub optimally at maximum [6].

Level 3 ([9]–[12])

A good detailed answer that has addressed all strands of the question – although these do not need to be balanced. They have related their points to place or places for illustration.

Level 2 ([5]–[8])

A less detailed answer. One strand to the question may be completely omitted or place details may be vague.

Level 1 ([1]–[4])

A poor answer that shows little understanding of the question asked. Possibly only one strand of the question is addressed. Terminology is poor and there will be some inaccuracies.

12

Section B

24

Total

60



Rewarding Learning

ADVANCED SUBSIDIARY (AS)

General Certificate of Education

January 2009

Geography

Assessment Unit AS 3

assessing

Module 3: Techniques in Geography

[ASG31]

MONDAY 26 JANUARY, AFTERNOON

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SCHEME**

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Part A

**AVAILABLE
MARKS**

1 Table of Data

Up to [3] for presenting a table which:

- has been computer-generated and contains data of a sufficient quality to meet the aim of the investigation;
- displays proper conventions such as a title, columns labelled with units of measurement specified, etc.;
- includes data appropriate for graphing and for statistical analysis. [3]

3

2 Summary Report

Levels 3 ([6]–[7])

A summary report with a precise aim and sections set out clearly for planning and data collection. There should be a well-structured description of pre-fieldwork planning and methods of data collection (these should relate to the stated aim as well as the tabulated data). Quality of written communication is of a high standard. Deduct up to [2] for reports which exceed the word limit.

Level 2 ([3]–[5])

The summary report may be rather brief and may fail to address both planning and data collection sections in sufficient depth. Alternatively the report may be adequate in length but may lack structure and may be less coherent. The candidate's ability to communicate may be reasonable in standard. Deduct up to [2] for reports which exceed the word limit.

Level 1 ([1]–[2])

A summary report which may be brief and provides little relevant detail and planning and data collection methods. It may be partially completed or exhibit a lack of understanding. Alternatively the report may be of sufficient length but contain little relevant material. Quality of written communication is limited. Deduct [1] for abuse of word limit. [7]

7

Part A Total

10

Part B

AVAILABLE
MARKS

- 1 (a) Award [1] for the identification of a realistic hazard and its associated danger. Award ($2 \times [1]$) for each risk minimisation strategy which is closely related to the hazard specified. [3]
- (b) There are obviously a variety of factors which need to be considered when planning to carry out sampling. Valid factors may include:
- The identification of possible strata or subsets within the population to ensure proportional representation within the sample population.
 - The consideration of sample size to ensure a representative view of the total population which is essential for the formulation of valid conclusions.
 - The consideration of the type of sampling procedure most suited to the type of investigation – it may involve the selection of point, quadrat, line or belt sampling (to ensure reliable data collection and valid conclusions).
 - The consideration of the most appropriate sampling method(s) – systematic, stratified or random procedures to yield reliable data in relation to the aim of the study.
 - The elimination of bias to ensure reliable and accurate data collection which is essential for the formulation of valid conclusions.
- Award ($2 \times [2]$) for a valid factor, well explained.
Award ($1 \times [1]$) for a valid factor with some attempt made to explain.
Maximum [1] for weak factors such as time, resources, money, people etc. [4]
- (c) (i) The statistical technique selected and applied to the data will depend on the aim of the fieldwork (as stated in the report).

Measures of Central Tendency and Dispersion

- [1] for the appropriateness of the technique to the aim of the study
- [2] for the calculation of the mean
- [2] for the calculation of the median
- [2] for the identification of the mode
- [2] for the calculation of the range

Spearman's Rank or Nearest Neighbour Analysis

- [1] for the appropriateness of the technique to the aim of the study.
- [6] for the accuracy of the calculation; method marks awarded appropriately.
- Maximum [3] in calculation if a major error in ranking results in an incorrect computation of r_s .
- Award [4] if calculations are correct as far as $\sum d^2$.
[2] for statistical interpretation (if error in calculation – interpretation marks can be credited if accurate for calculated value).

If insufficient values for Spearman's Rank, i.e. less than 7, (10 or more are normally required for reliability but one text book quotes 7 as acceptable) mark out of [4].

- [1] for the appropriateness of the technique to the aim of the study.
- [3] for the accuracy of the calculation; method marks awarded appropriately.
- [0] for statistical interpretation. [9]

- (ii) Marks are awarded for the quality of geographical explanation which should support the statistical outcome (the original aim/hypothesis which may be accepted or rejected).

Level 3 ([5]–[6])

Candidates accurately link the outcome of their statistical analysis to their own aim/hypothesis and provide a detailed, well written explanation which integrates relevant theoretical concepts and terminology.

Level 2 ([3]–[4])

At this level candidates provide a less detailed reasoning with a more limited attempt to integrate theoretical concepts. (Candidates who fail to calculate, or interpret, their statistical value(s) with complete accuracy in (i) may provide reasoning which is somewhat flawed and are likely to fall into this mark level.) If Spearman’s rank is unfinished, credit proposed explanation of expected trend to maximum Level 2.

Level 1 ([1]–[2])

Candidates’ geographical knowledge and understanding of the statistical outcome is superficial and the quality of the written communication may be poor. [6]

- (d) Look for quality of explanation and expect a great variation in response as factors will vary according to the fieldstudy chosen and suggested modification may relate to any particular stage of the investigation process (e.g. planning, sampling, data collection, graphical presentation, statistical analysis, interpretation, evaluation etc.).
 [3] for a realistic modification with a detailed explanation of how this suggestion could produce a more reliable geographical conclusion.
 [1] or [2] for a less detailed explanation of a realistic modification.

Maximum [1] for an answer with a suggested realistic modification but with no explanation provided on how it could increase the reliability of the conclusion. [3]

25

- 2 (a) (i) Award [1] for an appropriate mapping technique if it is one which corresponds with that attempted in Resource 2B.
(A choropleth or dot distribution map would be expected.) [1]
- (ii) Title [1] – must be specific and accurate.
Density Mapping [6] – breakdown as follows:
- **Completeness** [2] using a density mapping technique
 - **Accuracy** [3] – the following errors/omissions may reduce accuracy
 - Lack of intensity of tone to display density
 - Intensity of tone wrong way round
 - Overlap in class intervals
 - Gaps between class intervals
 - Unnecessary, or too few, classes (<3) to encompass all the data
 - **Precision** [1] – a level of care is required.
- Marks apply to both map and key.
If no key is provided – maximum [1] for title only.
- | | |
|---------|-----|
| T – [1] | [7] |
| C – [2] | |
| A – [3] | |
| P – [1] | |
- (iii) Award [2] for **one** well expressed limitation of the technique selected and applied in (ii).
Award [1] for **one** limitation which is valid but less explicitly stated.
- Disadvantages may include:
- Choropleth Mapping**
- A region is represented as having a uniform value which eliminates intra-regional variations
 - Striking contrasts may appear at regional boundary zones which may be unrealistic
 - A range of values disguises the actual single value which is most valid for each region
- Dot Distribution Mapping**
- Intra-regional variation can not be illustrated using the data provided in Resource 2A
 - To calculate a precise dot value, it is often essential to round values up or down, which introduces inaccuracy in the data [2]
- (b) (i) Low pressure system/Depression/Cyclone [1]
- (ii) A represents the Cold Front [1]
B represents the Warm Front [1] [2]
- (iii) Satellite images (remotely sensed imagery) are computer enhanced pictures taken from space and provide a large amount of up-to-date information. They have a vast number of practical uses which may include:
- The monitoring of deforestation, crop yields, desertification, pollution, oil spills, fires, volcanic eruptions etc.
 - Locating mineral and fossil fuel reserves
 - Military surveillance etc.
- Award (2 × [1]) for each valid use clearly stated [2]

- (c) (i) The middle value for distance when all values are ranked numerically [1]
- (ii) – Mean = 16.5 [1]
 – Mode = 45 [1] [2]
- (iii) The median is the most appropriate in summarising the data set as:
- The modal value of 45 is the second highest value in the set and is thus untypical
 - The mean has been skewed by the presence of extreme values from shoppers numbered 5, 12, 16 and 21.
- Award marks as follows:
 [1] for awareness of limitation of the mean value;
 [1] for awareness of limitation of the modal value;
 [1] for evidence of resource use. [3]
- (iv) The outer points are connected to delimit the catchment boundary or sphere of influence.
 Award [2] for the completion of the map [1] and key [1]. [2]
- (v) The shape of the sphere of influence will exhibit less protrusion in the Western catchment particularly from the area west/north west of the retail park. This is due to the renewed competition, as the long distance shoppers will possibly visit this newly developed retail development.
 Award [2] for an answer which describes and explains proposed changes to shape of the sphere of influence.
 Award [1] for an answer which may either describe, or explain, the changing sphere of influence shape. [2]

Part B Total

Total

**AVAILABLE
MARKS**

25

50

60

