

INTERNATIONAL AS GEOGRAPHY GG01A

Paper 1A Physical Geography 1 Hot Desert Systems and Landscapes

Mark scheme

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2 4 6 X G G 0 1 A / M S

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same, correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' 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.

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International AS Geography mark scheme

How to mark

Aims

When you are marking your allocation of scripts your main aims should be to:

- recognise and identify the achievements of students
- place students in the appropriate mark band and in the appropriate part of that mark band (high, low, middle) for **each** Assessment Objective
- record your judgements with brief notes, annotations and comments that are relevant to the mark scheme and make it clear to other examiners how you have arrived at the numerical mark awarded for each Assessment Objective
- ensure comparability of assessment for all students, regardless of question or examiner.

Approach

It is important to be **open-minded** and **positive** when marking scripts.

The specification recognises the variety of experiences and knowledge that students will have. It encourages them to study geography in a way that is relevant to them. The questions have been designed to give them opportunities to discuss what they have found out about geography. It is important to assess the quality of **what the student offers**.

Do not mark scripts based on the answer **you** would have written. The mark schemes have been composed to assess **quality of response** and not to identify expected items of knowledge.

Assessment Objectives

This component requires students to:

AO1	Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.
AO2	Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.
AO3	Use a variety of relevant quantitative, qualitative and fieldwork skills to: <ul style="list-style-type: none">• investigate geographical questions and issues• interpret, analyse and evaluate data and evidence• construct arguments and draw conclusions.

The marking grids

Do not think of levels equaling grade boundaries.

Depending on the part of the examination, the levels will have different mark ranges assigned to them. This will reflect the different weighting of Assessment Objectives in particular tasks and across the examination as a whole.

Using the grids

Having familiarised yourself with the descriptors and indicative content, read through the answer and annotate it (as instructed below) to identify the qualities that are being looked for and that it shows. You can now check the levels and award a mark.

Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptors for that level. The descriptors for the level indicate the different qualities that might be seen in the student's answer for that level. If it meets all the descriptors for the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptors and the answer. With practice and familiarity you will find that for better answers you will be able to skip through the lower levels of the mark scheme quickly.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best-fit approach for defining the level and then use the variability of the response to help decide the mark within the level.

Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark.

It is often best to start in the middle of the level's mark range and then check and adjust. If there is a lot of indicative content fully identifiable in the work you need to give the highest mark in the level. If only some is identifiable or it is only partially fulfilled, then give the lower mark.

The exemplar materials used during standardisation will also help. There will be an answer in the standardising materials that will correspond with each level of the mark scheme. This answer will have been awarded a mark by the lead examiner. You can compare the student's answer with the example to determine if it is of the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the lead examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

In addition to the levels descriptors, question specific indicative content is provided as a guide for examiners. This is not intended to be exhaustive and you must credit other valid points.

An answer that contains nothing of relevance to the question must be awarded no marks.

Annotating scripts

You should write a summative comment at the end for each Assessment Objective and indicate the marks for each Assessment Objective being tested at the end of the answer in the margin in sequence. It is vital that the way you arrive at a mark should be recorded on the script. This will help you with making accurate judgements and it will help any subsequent markers to identify how you are thinking. Please do not write negative comments about students' work or their alleged aptitudes.

Section A – Living with Hazards

Total for this section: 40 marks

Question	Part	Marking guidance	Total marks
01	1	<p>Which of the following would lead to the formation of an island arc?</p> <p>Key – D: Two oceanic plates moving towards each other</p>	<p>1</p> <p>AO1=1</p>

Question	Part	Marking guidance	Total marks
01	2	<p>What does earthquake magnitude describe?</p> <p>Key – D: The strength of an earthquake</p>	<p>1</p> <p>AO1=1</p>

Question	Part	Marking guidance	Total marks
01	3	<p>Which of the following describes a storm surge?</p> <p>Key – B: A rise in sea level caused by a tropical storm</p>	<p>1</p> <p>AO1=1</p>

Question	Part	Marking guidance	Total marks
01	4	<p>What is tephra?</p> <p>Key – C: Solid material ejected by a volcanic eruption</p>	<p>1</p> <p>AO1=1</p>

Question	Part	Marking guidance	Total marks
01	5	<p>An earthquake is an example of what type of hazard?</p> <p>Key – C: Geophysical</p>	<p>1</p> <p>AO1=1</p>

Question	Part	Marking guidance	Total marks
02		<p>Figure 1 shows the number of wildfires in the United States between 1984 and 2020.</p> <p>Figure 2 shows the average acres burned per wildfire in the United States between 1984 and 2020.</p> <p>Analyse the data shown in Figure 1 and Figure 2.</p>	<p>6</p> <p>AO3=6</p>

Level	Marks	Descriptor
2	4–6	AO3 – Clear use and analysis of the evidence that has been supplied linked to the number of wildfires and the average acres burned per wildfire in the United States. Considers both sets of data across time and makes observations about links between the two data sets.
1	1–3	AO3 – Some use of the evidence that has been supplied linked to the number of wildfires and the average acres burned per wildfire in the United States. Describes the overall pattern of change within each of the sets of data in a simplistic or partial way.
0	0	No creditable content.

Indicative Content

AO3

- Students should consider changes to the overall pattern between 1984–2020 for each data set and identify both the general trend and individual data (anomalies). Links between the two data sets should be considered.
- Figure 1 suggests that there is not a particular pattern, although in the last few years (2012–2020) the average number of wildfires appears to have decreased, with no years having over 70 000 wildfires.
- For the number of wildfires, there were ten years with over 80 000 wildfires, and only one year with 20 000 or fewer wildfires. After 1984 there were no years with less than 45 000 wildfires, it fluctuates within the range of 45 000 to 95 000
- Lowest number of wildfires (1984 – 20 000). Highest number of wildfires (1995/2006 – 95 000)
- Figure 2 shows that there appears to be an increase in the average acres burned, although it is not consistent.
- Figure 2 shows that between 1984 and 2001 the number was always below 80 acres, after 2001 the number was over 100 acres in most years.
- For the average acres burned per wildfire the lowest figure was approximately 18 acres in 1998 and the highest figure was approximately 170 acres in 2020.
- Lowest number of acres burned (1998 – 18). Highest number of acres burned (2020 – 170).
- There is not a clear relationship between the two data sets, although between 1984 and approximately 2000 there were more wildfires on average and the number of acres burned was relatively low, while in the last 10 years the average number of wildfires was lower and the average number of acres burned was higher.

Question	Part	Marking guidance	Total marks
03		<p>‘Tropical storms are more predictable than earthquakes.’</p> <p>Assess the extent to which you agree with this statement.</p> <p>AO1 – Demonstrates knowledge and understanding of the potential predictability of tropical storms and earthquakes.</p> <p>AO2 – Applies knowledge and understanding to illustrate the extent to which tropical storms and earthquakes are predictable.</p>	<p>9</p> <p>AO1=4 AO2=5</p>

Level	Marks	Descriptor
3	7–9	<p>AO1 – Demonstrates detailed knowledge and understanding of the potential predictability of tropical storms and earthquakes.</p> <p>AO2 – Applies basic knowledge and understanding to illustrate the extent to which tropical storms and earthquakes are predictable.</p>
2	4–6	<p>AO1 – Demonstrates clear knowledge and understanding of the potential predictability of tropical storms and earthquakes.</p> <p>AO2 – Applies clear knowledge and understanding to illustrate the extent to which tropical storms and earthquakes are predictable.</p>
1	1–3	<p>AO1 – Demonstrates basic knowledge and understanding of the potential predictability of tropical storms and earthquakes.</p> <p>AO2 – Applies basic knowledge and understanding to illustrate the extent to which tropical storms and earthquakes are predictable.</p>
0	0	No creditable content.

Indicative Content

Knowledge and understanding should relate to the ability to predict tropical storm and earthquakes.

AO1

- Prediction of earthquakes is often based on an understanding of tectonic processes.
- Prediction of earthquakes is often based on historical evidence of previous events.
- There are a variety of earthquake events and these may be more, or less predictable.
- The timescale of earthquakes can vary and this makes prediction more challenging.
- Earthquake events can vary in type and scale.
- Earthquakes can vary in terms of scale.
- Particular conditions are associated with the development of tropical storms.
- Tropical storms develop in particular parts of the world.
- Ocean temperatures and the development of tropical storms are monitored.

AO2

- The location of earthquakes is generally predictable.
- Earthquakes are less predictable in terms of time and magnitude.
- Human development can generate earthquakes (building dams/fracking).
- There is a seasonal pattern to the development of tropical storms which makes them more predictable.
- The tracks of tropical storms tend to be quite predictable.
- Ocean temperatures are a useful guide to the development of tropical storms.
- Use of data (NOAA) offers the possibility of accurate predication.
- Climate change and climatic cycles (El Nino/La Nina) may make prediction more challenging.
- Other factors may affect ability to predict, rather than the type of hazard eg wealth of the area affected.

Question	Part	Marking guidance	Total marks
04		<p>‘The benefits of living in hazardous areas are greater than the costs.’</p> <p>Evaluate this statement using one or more examples you have studied.</p> <p>AO1 – Knowledge of the potential benefits and costs of living in areas which are affected by natural hazards.</p> <p>AO2 – Application of knowledge and understanding to evaluate the potential benefits and costs of living in areas which are affected by natural hazards.</p>	<p>20</p> <p>AO1=10 AO2=10</p>

Level	Marks	Descriptor
4	16–20	<p>AO2 – Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question.</p> <p>AO2 – Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout.</p> <p>AO2 – Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p>AO1 – Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout.</p> <p>AO1 – Full and accurate knowledge and understanding of key concepts and processes throughout.</p> <p>AO1 – Detailed awareness of scale and temporal change which is well integrated where appropriate.</p>
3	11–15	<p>AO2 – Clear evaluative conclusion that is based on knowledge and understanding which is applied to the context of the question.</p> <p>AO2 – Generally clear, coherent and relevant analysis and evaluation in the application of knowledge and understanding.</p> <p>AO2 – Generally clear evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p>AO1 – Generally clear and relevant knowledge and understanding of place(s) and environments.</p> <p>AO1 – Generally clear and accurate knowledge and understanding of key concepts and processes.</p> <p>AO1 – Generally clear awareness of scale and temporal change which is integrated where appropriate.</p>

2	6–10	<p>AO2 – Some sense of an evaluative conclusion partially based upon knowledge and understanding which is applied to the context of the question.</p> <p>AO2 – Some partially relevant analysis and evaluation in the application of knowledge and understanding.</p> <p>AO2 – Some evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p>AO1 – Some relevant knowledge and understanding of place(s) and environments which is partially relevant.</p> <p>AO1 – Some knowledge and understanding of key concepts, processes and interactions and change.</p> <p>AO1 – Some awareness of scale and temporal change which is sometimes integrated where appropriate. There may be a few inaccuracies.</p>
1	1–5	<p>AO2 – Very limited and/or unsupported evaluative conclusion that is loosely based upon knowledge and understanding which is applied to the context of the question.</p> <p>AO2 – Very limited analysis and evaluation in the application of knowledge and understanding. This lacks clarity and coherence.</p> <p>AO2 – Very limited and rarely logical evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p>AO1 – Very limited relevant knowledge and understanding of place(s) and environments.</p> <p>AO1 – Isolated knowledge and understanding of key concepts and processes.</p> <p>AO1 – Very limited awareness of scale and temporal change which is rarely integrated where appropriate. There may be a number of inaccuracies.</p>
0	0	No creditable content.

Indicative Content

Content will be determined by the chosen example.

AO1

- Place knowledge of hazard risk areas and events.
- Knowledge of the socio-economic and political background related to the locations of hazard risk areas.
- Knowledge of the immediate and longer-term impacts and challenges of hazard events.
- Knowledge of the impacts of previous events in the chosen locations.
- Socio-economic background of the chosen locations.
- How prediction and preparation can reduce risks.
- How some places might be considered too risky after a hazard event.
- Examples can be drawn from different parts of the world, where there are distinct socio-economic advantages to living in hazardous areas or where perceived risk is lower (California) or where there may be limited alternative opportunities and an element of fatalism (Philippines) or where the risk is seen as too high, especially after a major hazard event (Montserrat).

AO2

- Analysis of the role of hazard perception in decision making.
- The distinction between actual and perceived risk.
- The idea of areas living with risk and considering them in terms of 'cost-benefit' analysis.
- How the level of risk is determined by a number of factors, including magnitude, frequency and risk management.
- An understanding that hazard risk areas often have significant socio-economic advantages which outweigh the potential risks.
- An understanding about how the level of risk varies.
- A comparative analysis of human response to hazards in relation to the Park model.
- An understanding that some areas might be abandoned because the risk is considered too high.

Section B – Hot Desert Systems and Landscapes

Total for this section: 40 marks

Question	Part	Marking guidance	Total marks
05	1	Which of the following describes an endorheic river? Key – B: A river that does not flow into the sea	1 AO1=1

Question	Part	Marking guidance	Total marks
05	2	‘A broad spread of alluvial material along the base of a mountain.’ This is a description of which of the following features? Key – A: Bahada	1 AO1=1

Question	Part	Marking guidance	Total marks
05	3	Which of the following is an example of a sediment store within a desert system? Key – C: Sief dune	1 AO1=1

Question	Part	Marking guidance	Total marks
05	4	What is the maximum average annual rainfall that defines a desert? Key – B: 250 mm per year	1 AO1=1

Question	Part	Marking guidance	Total marks
05	5	Which of the following expresses the water balance in hot deserts? Key – B: precipitation = evapotranspiration +/- soil water storage + runoff	1 AO1=1

Question	Part	Marking guidance	Total marks
06		<p>Figure 3 shows the annual mean expansion of the Sahara Desert between 1900 and 2015.</p> <p>Figure 4 shows precipitation anomalies in the Sahara Desert between 1900 and 2015.</p> <p>Analyse the information shown in Figure 3 and Figure 4.</p>	<p>6</p> <p>AO3=6</p>

Level	Marks	Descriptor
2	4–6	AO3 – Clear selection and analysis of the evidence that has been provided about expansion of the Sahara Desert and precipitation anomalies. Considers both graphs across time and makes observations about links between the two sets of information.
1	1–3	AO3 – Some use of the evidence that has been supplied linked to the expansion of the Sahara Desert and precipitation anomalies. Describes the overall pattern of change within each of the sets of graphs in a simplistic or partial way.
0	0	No creditable content.

Indicative Content

AO3

- Students should consider the overall change to the expanse of the Sahara Desert and the changing pattern of precipitation.
- With regard to the expansion of the Sahara Desert there is an upward trend, with distinct peaks and troughs. Expansion appears to have been at the greatest rate between 1970–1985 growing above 7000 km², while there appears to have been a dip with slower growth between 1950–1960.
- Figure 3 shows that the lowest amount of growth was seen around 1907 at 3800km². The highest growth was seen in 1984 at 9300km².
- With regard to precipitation anomalies, from 1900–1950 there was a variable pattern with a range of 35mm. Between 1950–1970 precipitation was mainly above the average. From 1970 – 2015 precipitation was below the long term average in all but 6 years, reaching its lowest point of -23.5mm in 1983
- The rate of expansion reflects the changing precipitation pattern, with the slowest expansion during times when precipitation was above the average and the greatest expansion during times when precipitation was below the average. For example, the 1950s saw a slower expansion and this was a time when rainfall was always above the long-term average.
- 1984 saw the greatest expansion at 9300km² and 1983-84 saw the lowest fall in precipitation at -23mm below average.

Question	Part	Marking guidance	Total marks
07		<p>Assess the role of water in creating distinctive landscape features in hot deserts.</p> <p>AO1 – Knowledge and understanding of the role of water in creating distinctive landscape features in hot deserts.</p> <p>AO2 – Application of knowledge and understanding to analyse the role of water in creating distinctive landscape features in hot deserts.</p>	<p>9</p> <p>AO1=4 AO2=5</p>

Level	Marks	Descriptor
3	7–9	<p>AO1 – Demonstrates detailed knowledge and understanding of the role of water in creating distinctive landscape features in hot deserts.</p> <p>AO2 – Applies knowledge and understanding to offer a detailed discussion which considers the importance of the role of water in creating distinctive landscape features in hot deserts.</p>
2	4–6	<p>AO1 – Demonstrates clear knowledge and understanding of the role of water in creating distinctive landscape features in hot deserts.</p> <p>AO2 – Applies knowledge and understanding to offer a discussion which considers the role of water in creating distinctive landscape features in hot deserts.</p>
1	1–3	<p>AO1 – Demonstrates basic knowledge and understanding of the role of water in creating distinctive landscape features in hot deserts.</p> <p>AO2 – Applies limited knowledge and understanding which describes the role of water in creating distinctive landscape features in hot deserts.</p>
0	0	No creditable content.

Indicative Content

AO1

- Appreciation that water action is a dominant process in hot desert environments.
- In hot desert areas there are short periods of heavy rainfall which can cause erosion and transport and deposit sediment.
- Flash floods can occur and these have the power to change landscapes.
- There are different ways that water can erode and transport sediment.
- Erosion tends to be the dominant force in highland areas and deposition tends to be the dominant force in lowland areas.
- There are many landscape features associated with the action of water, including mesas, buttes, canyons, wadis, playas and alluvial fans.

AO2

- Understand that hot deserts can have periods of intense, powerful rainfall which can be a powerful erosive force and can transport and deposit sediment.
- Some features (mesas, buttes) are relic features formed by water in the past.
- Some features (canyons, wadis) are still being formed.
- Evaluation of the role of erosion in forming particular landscape features.
- Analysis of the formation of playas in hollows/depressions.
- Evaluation of the role of deposition in the formation of alluvial fans and bahadas.
- Evaluation of the relative importance of the role of wind in comparison to the role of water may be considered

Question	Part	Marking guidance	Total marks
08		<p>‘Responses to the problems of desertification are always successful.’</p> <p>Evaluate this statement with reference to one or more examples you have studied.</p> <p>AO1 – Knowledge of the causes and responses to the problems of desertification.</p> <p>AO2 – Application of knowledge and understanding to evaluate the extent to which the responses to the problems of desertification are successful.</p>	<p>20</p> <p>AO1=10 AO2=10</p>

Level	Marks	Descriptor
4	16–20	<p>AO2 – Detailed evaluative conclusion that is rational and firmly based on knowledge and understanding which is applied to the context of the question.</p> <p>AO2 – Detailed, coherent and relevant analysis and evaluation in the application of knowledge and understanding throughout.</p> <p>AO2 – Full evidence of links between knowledge and understanding to the application of knowledge and understanding in different contexts.</p> <p>AO1 – Detailed, highly relevant and appropriate knowledge and understanding of place(s) and environments used throughout.</p> <p>AO1 – Full and accurate knowledge and understanding of key concepts and processes throughout.</p> <p>AO1 – Detailed awareness of scale and temporal change which is well integrated where appropriate.</p>
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0	0	No creditable content.

Indicative Content

AO1

- The natural causes of desertification.
- The human causes of desertification.
- What are the physical and human impacts of desertification?
- Knowledge of ways in which the problem of desertification can be addressed.
- An awareness of the importance of resilience, mitigation and adaptation in relation to the management of the problems of desertification.
- Examples can include water and/or land management and be at any scale.
- Possible examples might include: The Great Green Wall of Africa; Reforestation (China); Community land/water management projects (African Sahel); Water/land management (USA); Tal Rimah Rangeland Rehabilitation Project (Jordan).

AO2

- An understanding that to manage the effects of desertification the causes need to be understood.
- An understanding that managing the problems of desertification involves mitigation and adaptation.
- Understand that managing the problem of desertification requires a combination of working with local communities and adopting different water and land management techniques which may be contrary to the cultural norm.
- Assessment of the role played by climate change in managing and responding to desertification in alternative futures
- Evaluation of responses to desertification at different scales: local, regional, national and global
- Assessing the effectiveness of management strategies in relation to the rehabilitation of the physical environment and long-term impact on local communities.

Assessment Objective grid

	AO1	AO2	AO3	Total
Section A				
01.1	1			1
01.2	1			1
01.3	1			1
01.4	1			1
01.5	1			1
02			6	6
03	4	5		9
04	10	10		20
Section B				
05.1	1			1
05.2	1			1
05.3	1			1
05.4	1			1
05.5	1			1
06			6	6
07	4	5		9
08	10	10		20
Unit total	38	30	12	80