Oxford Cambridge and RSA

# GCE

## Geography

**H481/03:** Geographical debates

Advanced GCE

# Mark Scheme for November 2020


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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

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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## Annotations

| Annotation | Meaning |
|---|---|
| | Highlight |
| | Off page comment |
| ^ | Omission mark |
| ? | Unclear or Indicates material for which there is no credit |
| R | Rubric error placed at start of response not being counted |
| L1 | Level 1 |
| L2 | Level 2 |
| L3 | Level 3 |
| L4 | Level 4 |
| S | Synoptic link |
| DEV | Development of a point |
| IRRL | Significant amount of material which doesn't answer the question |
| SEEN | Used to denote that points had been seen and noted but mostly where credit was given |
| NE | No place specific detail |
| | Highlighting an issue e.g. irrelevant paragraph. Use in conjunction with another stamp e.g. IRRL or EVAL |
| BP | Blank page |
| EVAL | Evaluation |



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## Subject Specific Marking Instructions

### INTRODUCTION

Your first task as an Examiner is to become thoroughly familiar with the material on which the examination depends. This material includes:

- the specification, especially the assessment objectives
- the question paper and its rubrics
- the mark scheme.

You should ensure that you have copies of these materials.

You should ensure also that you are familiar with the administrative procedures related to the marking process. These are set out in the OCR booklet **Instructions for Examiners**. If you are examining for the first time, please read carefully **Appendix 5 Introduction to Script Marking: Notes for New Examiners**.

Please ask for help or guidance whenever you need it. Your first point of contact is your Team Leader.



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## USING THE MARK SCHEME

Please study this Mark Scheme carefully. The Mark Scheme is an integral part of the process that begins with the setting of the question paper and ends with the awarding of grades. Question papers and Mark Schemes are developed in association with each other so that issues of differentiation and positive achievement can be addressed from the very start.

This Mark Scheme is a working document; it is not exhaustive; it does not provide 'correct' answers. The Mark Scheme can only provide 'best guesses' about how the question will work out, and it is subject to revision after we have looked at a wide range of scripts.

The Examiners' Standardisation Meeting will ensure that the Mark Scheme covers the range of candidates' responses to the questions, and that all Examiners understand and apply the Mark Scheme in the same way. The Mark Scheme will be discussed and amended at the meeting, and administrative procedures will be confirmed. Co-ordination scripts will be issued at the meeting to exemplify aspects of candidates' responses and achievements; the co-ordination scripts then become part of this Mark Scheme.

Before the Standardisation Meeting, you should read and mark in pencil a number of scripts, in order to gain an impression of the range of responses and achievement that may be expected.

In your marking, you will encounter valid responses which are not covered by the Mark Scheme: these responses must be credited. You will encounter answers which fall outside the 'target range' of Bands for the paper which you are marking. Please mark these answers according to the marking criteria. Please read carefully all the scripts in your allocation and make every effort to look positively for achievement throughout the ability range. Always be prepared to use the full range of marks.

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**LEVELS OF RESPONSE QUESTIONS:**

The indicative content indicates the expected parameters for candidates' answers, but be prepared to recognise and credit unexpected approaches where they show relevance.

Using 'best-fit', decide first which set of level descriptors best describes the overall quality of the answer. Once the level is located, adjust the mark concentrating on features of the answer which make it stronger or weaker following the guidelines for refinement.

**Highest mark:** If clear evidence of all the qualities in the level descriptors is shown, the HIGHEST Mark should be awarded.

**Lowest mark:** If the answer shows the candidate to be borderline (i.e. they have achieved all the qualities of the levels below and show limited evidence of meeting the criteria of the level in question) the LOWEST mark should be awarded.

**Middle mark:** This mark should be used for candidates who are secure in the level. They are not 'borderline' but they have only achieved some of the qualities in the level descriptors.

Be prepared to use the full range of marks. Do not reserve (e.g.) highest level marks 'in case' something turns up of a quality you have not yet seen. If an answer gives clear evidence of the qualities described in the level descriptors, reward appropriately.

Quality of extended response will be assessed in questions marked with an (*). Quality of extended response is not attributed to any single assessment objective but instead is assessed against the entire response for the question.

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| | AO1 | AO2 | AO3 | Quality of extended response |
|---|---|---|---|---|
| **Comprehensive** | A wide range of detailed and accurate knowledge that demonstrates fully developed understanding that shows full relevance to the demands of the question.<br>Precision in the use of question terminology. | Knowledge and understanding shown is consistently applied to the context of the question, in order to form a:<br><br>Clear, developed and convincing analysis that is fully accurate.<br><br>Clear, developed and convincing interpretation that is fully accurate.<br><br>Detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based. | Quantitative, qualitative and/or fieldwork skills are used in a consistently appropriate and effective way and with a high degree of competence and precision. | There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. |
| **Thorough** | A range of detailed and accurate knowledge that demonstrates well developed understanding that is relevant to the demands of the question.<br>Generally precise in the use of question terminology. | Knowledge and understanding shown is mainly applied to the context of the question, in order to form a:<br><br>Clear and developed analysis that shows accuracy.<br><br>Clear and developed interpretation that shows accuracy.<br><br>Detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence. | Quantitative, qualitative and/or fieldwork skills are used in a suitable way and with a good level of competence and precision. | There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. |

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| | AO1 | AO2 | AO3 | Quality of extended response |
|---|---|---|---|---|
| **Reasonable** | Some sound knowledge that demonstrates partially developed understanding that is relevant to the demands to the question.<br>Awareness of the meaning of the terms in the question. | Knowledge and understanding shown is partially applied to the context of the question, in order to form a:<br><br>Sound analysis that shows some accuracy.<br><br>Sound interpretation that shows some accuracy.<br><br>Sound evaluation that offers generalised judgments and conclusions, with limited use of evidence. | Quantitative, qualitative and/or fieldwork skills are used in a mostly suitable way with a sound level of competence but may lack precision. | The information has some relevance and is presented with limited structure. The information is supported by limited evidence. |
| **Basic** | Limited knowledge that is relevant to the topic or question with little or no development.<br>Confusion and inability to deconstruct terminology as used in the question. | Knowledge and understanding shows limited application to the context of the question in order to form a/an:<br><br>Simple analysis that shows limited accuracy.<br><br>Simple interpretation that shows limited accuracy.<br><br>Un-supported evaluation that offers simple conclusions. | Quantitative, qualitative and/or fieldwork skills are used inappropriately with limited competence and precision. | The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. |



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| Question | | | Answer | Mark | Guidance |
|---|---|---|---|---|---|
| 1 | (a) | | **Identify <u>three</u> limitations of Fig. 1 as a source of information about shrinking ice as a result of climate change.**<br><br>The photograph shows the meltwaters and a distant glimpse of the Franz Josef glacier, New Zealand.<br>Possible limitations include:<br>• No evidence on rate of change i.e. no early photo to compare<br>• Reasons for melting of ice/shrinking of glacier not clear e.g. temperature data<br>• No clear evidence of scale e.g. scale of glacier and valley which can inform comments regarding rate of change<br>• Franz Josef is just one glacier and not necessarily representative of all<br>• Who produced the source – bias / purpose of photo<br>• Time of year photo taken – seasonal change to extent of ice | **3**<br>**AO3 x3** | **AO3 – 3 marks**<br>3x1 (✓) for three limitations of the photograph as a source of information identified through critical study of the resource. |
| 1 | (b) | | **Explain the role and possible bias of the media in shaping the public image of climate change.**<br><br>**Level 3 (5-6 marks)**<br>Demonstrates **thorough** knowledge and understanding of the role and possible bias of the media in shaping the public image of climate change (AO1).<br><br>This will be shown by including **well-developed** ideas about the role and possible bias of the media in shaping the public image of climate change.<br><br>**Level 2 (3-4 marks)** | **6**<br>**AO1 x6** | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of the role and possible bias of the media in shaping the public image of climate change could potentially include:<br><br>Role<br>• Crucial role in forming public opinion as many do not read scientific papers, reports, blogs + specialist websites<br>• Social media growing in popularity as source of information / opinion<br>Bias |



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| | | | Demonstrates **reasonable** knowledge and understanding of the role and possible bias of the media in shaping the public image of climate change (AO1).<br><br>This will be shown by including **developed** ideas about either the role or possible bias of the media in shaping the public image of climate change.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of either the role or possible bias of the media in shaping the public image of climate change (AO1).<br><br>There may be **simple** ideas about either the role or possible bias of the media in shaping the public image of climate change.<br><br>**0 marks**<br>No response or no response worthy of credit. | | • Simplistic and sensational reporting in some media<br>• Social media in particular unregulated allowing unsubstantiated claims to be made<br>• Not necessarily representative of scientific research – overwhelming majority of scientific research supports idea of anthropogenic climate change - false balance by giving equal weighting to dissenting views - increasing appearance of controversy<br>• Political leanings of the media organisation will slant the content e.g. right leaning publications are more sceptical than left and their differences make the issue appear more contentious than it is<br>• Some of the strongest opinions are from large wealthy companies (with media influence) seeking to protect profits from extraction and use of fossil fuels by opposing climate change evidence<br>• Role and bias to be considered for bottom of L2+. |



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| Question | | | Answer | Mark | Guidance |
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| 2 | (a) | | **Identify <u>three</u> limitations of Fig. 2 as a source of information about survival rates for common cancers in the UK.**<br><br>The table shows different types of cancer and the percentage of those who survived.<br>Possible limitations include:<br>• Definition of survival - 3/5/10 years after diagnosis?<br>• No data on ~~l~~length of survival<br>• No data on the frequency of each cancer in the population<br>• No data on how rates compare with previous years / decades<br>• No information on geographical distribution/post code that might affect survival rates e.g. access to health care; socio-economic factors (age structure / deprivation / over-crowding)<br>• Gender bias in Breast cancer – males also contract<br>• No comparison with other places how does the UK compare with the rest of the World / Europe, USA etc?<br>• Who produced the source – bias<br>• Source is out of date | **3**<br>**AO3 x3** | **AO3 – 3 marks**<br>3x1 (✓) for three limitations of the chart as a source of information identified through critical questioning of the resource. |
| 2 | (b) | | **Explain cultural causes of non-communicable diseases.**<br><br>**Level 3 (5-6 marks)**<br>Demonstrates **thorough** knowledge and understanding of cultural causes of non-communicable diseases (AO1).<br><br>This will be shown by including **well-developed** ideas about at least two cultural causes of non-communicable diseases.<br><br>**Level 2 (3-4 marks)** | **6**<br>**AO1 x6** | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of cultural causes of a non-communicable disease could potentially include:<br>• Non-communicable = not spread from person to person. Non-infectious + non-contagious e.g.CVDs, diabetes, asthma<br>• Response based on communicable = 0<br>• Cultural factors include traditions, values, beliefs and behaviours held by a defined group of people |



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| | | | Demonstrates **reasonable** knowledge and understanding of cultural causes of non-communicable diseases (AO1).<br><br>This will be shown by including **developed** ideas about cultural causes of non-communicable diseases.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of cultural causes of non-communicable diseases (AO1).<br><br>There may be **simple** ideas about cultural causes of non-communicable diseases.<br><br>**0 marks**<br>No response or no response worthy of credit. | | • Behavioural / lifestyle risk factors e.g. consumption of unhealthy substances e.g. alcohol, tobacco. Russia – high levels of oral, oesophageal + liver cancers associated with drinking culture<br>• Behavioural / lifestyle risk factors e.g. sedentary → ↑ incidence of CVDs, type-2 diabetes; dietary choices → ↑ incidence of CVDs + some cancers. Some groups in ACs and increasingly some EDCs as ↑ wealth allows change in diets.<br>• Lower economic status among some groups in ACs → poor diets<br>• Economic changes allow changes in behaviour / lifestyle e.g. ↓ real cost of alcohol, cheap processed food e.g. fast food<br>• Unavoidable hazardous life-style e.g. cooking + lighting + heating with biomass / paraffin in EDCs + LIDCs ↑ incidence of lung cancers<br>• Behavioural / lifestyle risk factors e.g. use of tanning lotions and sunbeds, in some societies that value a suntanned skin, increasing risk of skin cancers<br>• L3 possible if only one disease referenced.<br>• 1 cause = bottom of L2 max. |



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| Question | | | Answer | Mark | Guidance |
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| 3 | (a) | | **Identify <u>three</u> limitations of Fig. 3 as a source of information about the world's oceans.**<br><br>The extract focuses on the world's oceans.<br>Possible limitations include:<br>• List of size order – it isn't clear if this is by volume or area<br>• Lack of data on Indian and Atlantic Oceans<br>• Data given for Southern Pacific and Arctic Oceans not comparable<br>• No overall information on location/ distribution<br>• No information about who produced this information – possible bias | 3<br>AO3 x3 | **AO3 – 3 marks**<br>3x1 (✓) for three limitations of the extract as a source of information about the world's oceans, identified through critical questioning of the resource. |
| 3 | (b) | | **Explain factors that influence the biodiversity in inter-tidal ecosystems.**<br><br>**Level 3 (5-6 marks)**<br>Demonstrates **thorough** knowledge and understanding of factors influencing biodiversity in inter-tidal ecosystems (AO1).<br><br>This will be shown by including **well-developed** ideas about factors influencing biodiversity in inter-tidal ecosystems.<br><br>**Level 2 (3-4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of factors influencing biodiversity in inter-tidal ecosystems (AO1).<br><br>This will be shown by including **developed** ideas about factors influencing biodiversity in inter-tidal ecosystems.<br><br>**Level 1 (1–2 marks)** | 6<br>AO1 x6 | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of factors influencing biodiversity in inter-tidal ecosystems could potentially include:<br>• Tidal range – dynamic zone between low and high tide<br>• Biodiversity has adapted to cope with such extreme conditions (e.g., flooded/exposed)<br>• Alluvial as well as marine sediment feeds the system, (i.e. dissolved and solid nutrients mixed by tidal movements).<br>• Supports a very productive ecosystem encouraging a complex and wide ranging biodiversity, often zoned according to conditions each with different and distinctive flora and associated fauna.<br>• Formation of zones and evidence of succession.<br>• Linked examples and reference to salt marshes |



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| | | | Demonstrates **basic** knowledge and understanding of factors influencing biodiversity in inter-tidal ecosystems (AO1).<br><br>There may be **simple** ideas about factors influencing biodiversity in inter-tidal ecosystems.<br><br>**0 marks**<br>No response or no response worthy of credit. | | |



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| Question | | | Answer | Mark | Guidance |
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| 4 | (a) | | **Identify <u>three</u> limitations of Fig. 4 as a source of information about the predicted impact of climate change on world food prices since 2010.**<br><br>The bar graph focuses on a range of food products prices which are affected by climate change. Possible limitations include:<br>• Background assumptions/calculations about impact of climate change e.g. regional temperature + precipitation patterns; sunshine levels not given<br>• No information on how '2030 baseline prediction calculated for each food category e.g. is this the mean global price?<br>• No reference to actual cost of foods related to local purchasing power<br>• Lack of data relating to a variety of climate change scenarios and/or margins of error in prediction<br>• Some categories very vague e.g. 'other processed meat', 'other crops' while others are not clear e.g. 'livestock' which could be anything from poultry to beef cattle<br>• Who produced the source - bias | **3**<br>**AO3 x3** | **AO3 – 3 marks**<br>3x1 (✓) for three limitations of the graph as a source of information identified through critical questioning of the resource. |
| 4 | (b) | | **Explain how globalisation creates the issue of food miles.**<br><br>**Level 3 (5-6 marks)**<br>Demonstrates **thorough** knowledge and understanding of how globalisation creates the issue of food miles (AO1).<br><br>This will be shown by including **well-developed** ideas about how globalisation creates the issue of food miles.<br><br>**Level 2 (3-4 marks)** | **6**<br>**AO1 x6** | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of how globalisation creates the issue of food miles could potentially include:<br>• Increasing proportion of food items are transported over longer distances as a greater awareness of different foods and diets are created by globalisation.<br>• Implications for GHG emissions and the environment (19 million tonnes of carbon dioxide is released by transportation of UK food) |



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| | | | Demonstrates **reasonable** knowledge and understanding of how globalisation creates the issue of food miles. (AO1).<br><br>This will be shown by including **developed** ideas about how globalisation creates the issue of food miles.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of how globalisation creates the issue of food miles. (AO1).<br><br>There may be **simple** ideas about how globalisation creates the issue of food miles.<br><br>**0 marks**<br>No response or no response worthy of credit. | | • Food produced in heated glasshouses e.g. tomatoes in UK glasshouses, may have higher carbon footprint than the same food grown further away in hotter climates e.g. Spain<br>• UK produces only c. 60% of its food domestically.<br>• Transportation is only a small part of food miles, often the production process produces 4 times as much GHG emissions e.g. machinery; fertilisers + pesticides + fungicides; irrigation – pumping water; methane output from livestock. Also food processing + storage uses energy + produces GHGs.<br>• Source of energy used in production + processing important e.g. electricity produced by HEP / solar / wind c.f. energy used in transport which is usually oil. NZ lamb has lower carbon footprint than most UK lamb. |



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| Question | | | Answer | Mark | Guidance |
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| 5 | (a) | | **Identify <u>three</u> limitations of Fig. 5 as a source of information about mitigation against vulnerability to hazards from earthquakes.**<br><br>The sketch shows a range of earthquake proofing techniques for a building.<br>Possible limitations include:<br>• Lack of information on engineering techniques/materials used<br>• Cost of mitigation (engineering)<br>• Lack of data on effectiveness of earthquake proofing techniques for buildings<br>• Lack of detail on the type of earthquake waves that each building technique is mitigating against<br>• No information on type of rock on which the building stands in relation to nature of engineering e.g. depth of piling<br>• No other types of mitigation mentioned such as preparation<br>• Lack of information about who has produced this - bias | 3<br>AO3 x3 | **AO3 – 3 marks**<br>3x1 (✓) for three limitations of the sketch as a source of information about mitigation against vulnerability to hazards from earthquakes identified through critical questioning of the resource. |
| 5 | (b) | | **Explain the features of shallow-focus earthquakes.**<br><br>**Level 3 (5-6 marks)**<br>Demonstrates **thorough** knowledge and understanding of the features of shallow-focus earthquakes (AO1).<br><br>This will be shown by including **well-developed** ideas about the features of shallow-focus earthquakes.<br><br>**Level 2 (3-4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of the features of shallow-focus earthquakes (AO1). | 6<br>AO1 x6 | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of the features of shallow-focus earthquakes could potentially include:<br>• Shallow-focus earthquakes extend from surface to a depth of c.70km<br>Features:<br>• Release of energy → either or both crustal / fault movements in brittle, cold rocks or magma movement. Also mine collapse. Therefore common – c. 75% of 'quakes.<br>• Although generally low magnitude, can cause relatively high levels of damage as energy |



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| | | | This will be shown by including **developed** ideas about the features of shallow-focus earthquakes.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of the features of shallow-focus earthquakes (AO1).<br><br>There may be **simple** ideas about the features of shallow-focus earthquakes.<br><br>**0 marks**<br>No response or no response worthy of credit. | | released over a smaller area c.f. deep focus 'quakes<br>• Difference in time between primary + secondary waves relatively short as focus and epicentre close to each other.<br><br>NB Watch for mirror responses<br>'…shallow focus are…. Whereas deep focus are …'<br>Max bottom of L2 for such an answer. |



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| Question | | | Answer | Mark | Guidance |
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| 6 | | | **Assess how responses to climate change are affected by issues of <u>either</u> human rights <u>or</u> territorial integrity.**<br><br>**Level 4 (10-12 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of responses to climate change and issues of either human rights or territorial integrity (AO1).<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how responses to climate change are affected by issues of either human rights or territorial integrity (AO2).<br><br>This will be shown by including **well-developed** ideas about how responses to climate change are affected by issues of either human rights or territorial integrity.<br><br>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.<br><br>**Level 3 (7-9 marks)**<br>Demonstrates **thorough** knowledge and understanding of responses to climate change and issues of either human rights or territorial integrity (AO1).<br><br>Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how responses to climate change are affected by issues of either human rights or territorial integrity (AO2).<br><br>This will be shown by including **well-developed** ideas about **either** <u>responses to climate change</u> **or** <u>issues of either human</u> | 12<br>AO1 x6<br>AO2 x6 | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of responses to climate change and issues of <u>either</u> human rights <u>or</u> territorial integrity could potentially include:<br><br>Responses to climate change could include:<br>• Work of the IPCC, international directives (e.g. Kyoto protocol), EU climate directives all depend on co-operation at all scales for success<br>• Carbon trading and carbon credits<br>• National and sub-national policies<br>• There are a range of methods at a range of scales<br><br>Issues of human rights<br>• How human rights are promoted and protected by global governance e.g. treaties, laws, institutions, norms<br>• Contributions and interactions of global governance of different organisations (UN/national government/NGO) at a range of scales<br>• How global governance of human rights has consequences for citizens and places both positive and negative<br><br>OR - Issues of territorial integrity<br>• How access to resources can cause territorial conflict<br>• Role of institutions, treaties, laws and norms in regulating conflict<br>• Interventions and interactions of organisations at a range of scales |

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| | | | rights or territorial integrity and **developed** ideas for the other focus.<br><br>There are clear attempts to make synoptic links between the content from different parts of the course of study, but these are not always appropriate.<br><br>**Level 2 (4-6 marks)**<br>Demonstrates **reasonable** knowledge and understanding of responses to climate change and issues of either human rights or territorial integrity (AO1).<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how responses to climate change are affected by issues of either human rights or territorial integrity (AO2).<br><br>This will be shown by including **developed** ideas about **either** responses to climate change **or** issues of either human rights or territorial integrity and **simple** ideas for the other focus.<br><br>There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant.<br><br>**Level 1 (1-3 marks)**<br>Demonstrates **basic** knowledge and understanding of responses to climate change and issues of either human rights or territorial integrity (AO1).<br><br>Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how responses to climate change are affected by issues of either human rights or territorial integrity (AO2).<br><br>This will be shown by including **simple** ideas about responses to climate change **or** issues of either human rights or territorial integrity. | | • Consequences for local communities (both positive and negative)<br><br>**AO2 – 6 marks**<br>Application of knowledge and understanding to analyse how responses to climate change are affected by issues of either human rights or territorial integrity could potentially include:<br>• where human rights or territorial integrity are stable, the international responses to climate change are likely to be stable, experience greater success and uniformity e.g. ACs and some EDCs<br>• a wide range of examples could be used, at a variety of different scales. Although question specifies international responses, these could be exemplified at a national or sub-national scale (e.g. Scottish v. UK emission targets)<br>• International responses could have varying rates of success e.g. less unified response, if any, to climate change where human rights (China/India exemption from Kyoto), or territorial integrity under dispute (eg Azawad, Tuareg Mali, where instability has led to UN involvement, but not related to responses to climate change),<br>• Role of other organisations such as World bank and Oxfam.<br>• A country's right to development – some don't sign up to initiatives as they believe it is their right to economic prosperity.<br>• Response to climate change can be about the rights of citizens to be free from issues associated with it<br>• Countries experiencing human rights abuses can be more prone to suffering the consequences of climate change. |



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| | | | There are limited attempts to make synoptic links between content from different parts of the course of study.<br><br>**0 marks**<br>No response or no response worthy of credit. | | • Many are of the belief that ACs should pay LIDCs to protect the environment and mitigate against climate change. |



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| 7 | | | **Assess how the global distribution of communicable disease is affected by <u>either</u> global trade <u>or</u> global migration.**<br><br>**Level 4 (10-12 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of the global distribution of communicable disease and either global trade or global migration (AO1).<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of the global distribution of communicable disease and how it is affected by either global trade or global migration (AO2).<br><br>This will be shown by including **well-developed** ideas about the global distribution of communicable disease and either global trade or global migration.<br><br>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.<br><br>**Level 3 (7-9 marks)**<br>Demonstrates **thorough** knowledge and understanding of the global distribution of communicable disease and either global trade or global migration (AO1).<br><br>Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of the global distribution of communicable disease and how it is affected by either global trade or global migration (AO2). | **12**<br>**AO1 x6**<br>**AO2 x6** | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of the global distribution of communicable disease and <u>either</u> global trade <u>or</u> global migration could potentially include:<br><br>Global distribution of communicable diseases<br>• Communicable disease (an infectious disease which spreads from host to host) e.g. malaria, HIV, tuberculosis,<br>• Current distributions are influenced by:<br>  ○ physical factors, (e.g. patterns of temperature, precipitation, relief and water sources)<br>  ○ economic factors, (e.g. wealth/poverty, health care)<br>  ○ social factors, (e.g. population density, housing quality, health, education)<br>  ○ political factors (e.g. government priorities such as investment in sanitation/food supplies<br>Global trade<br>• Spatial patterns of international trade in merchandise, services + capital<br>• Global = inter-regional e.g. Europe ↔ Asia<br>• Dominated by ACs + faster growing EDCs (China, Indonesia). LIDCs have limited access.<br>• Can promote stability or create inequalities through flows of people, money, ideas and technology<br><br>OR - Global migration<br>• Spatial patterns of international migration |

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| | | | This will be shown by including **well-developed** ideas about **either** global distribution of communicable disease **or** global trade **or** global migration and **developed** ideas for the other focus.<br><br>There are clear attempts to make synoptic links between the content from different parts of the course of study, but these are not always appropriate.<br><br>**Level 2 (4-6 marks)**<br>Demonstrates **reasonable** knowledge and understanding of the global distribution of communicable disease and either global trade or global migration (AO1).<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of the global distribution of communicable disease and how it is affected by either global trade or global migration (AO2).<br><br>This will be shown by including **developed** ideas about **either** global distribution of communicable disease **or** global trade **or** global migration and **simple** ideas for the other focus.<br><br>There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant.<br><br>**Level 1 (1-3 marks)**<br>Demonstrates **basic** knowledge and understanding of the global distribution of communicable disease and either global trade or global migration (AO1).<br><br>Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of the global distribution of communicable disease and either global trade or global migration (AO2). | | • Can promote stability or create inequalities through flows of people, money, ideas and technology<br>• Globalisation leading to emergence of new source areas and host destinations both of economic migrants + refugees + asylum seekers<br><br>**AO2 – 6 marks**<br>Application of knowledge and understanding to analyse how the global distribution of communicable disease is affected by <u>either</u> global trade <u>or</u> global migration could potentially include:<br><br>Increasing incidence of communicable disease;<br>• Diseases able to spread over wider area through global trade or migration links<br>• Movement of people can lead to different strains of disease spreading e.g. cholera → Haiti due to relief personnel following 2010 earthquake<br>• Importance of scale e.g. from diffusion of disease within an LIDC to global pandemic due to infected migrants e.g. Covid 19; MERS-CoV; SARS-CoV<br><br>Decreasing incidence of communicable disease;<br>• Global trade → ↑ wealth which can be spent on raising HDI → ↓ in incidence of disease e.g. ACs<br>• Migrant remittances raise living standards of families in receipt → ↓ in susceptibility to disease<br>• Technology can limit spread of disease despite global trade and migratory routes e.g. vaccines<br>• Border controls can limit spread of potential disease e.g. prevent contaminated goods entering; health checks of arrivals |



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| | | | This will be shown by including **simple** ideas about the global distribution of communicable disease and either global trade or global migration.<br><br>There are limited attempts to make synoptic links between content from different parts of the course of study.<br><br>**0 marks**<br>No response or no response worthy of credit | | • Physical factors still limit spread of disease despite global trade and migratory routes e.g. oceans + mountain barriers |



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| 8 | | | **Assess how pollution in oceans is influenced by players driving economic change.**<br><br>**Level 4 (10-12 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of pollution in oceans and players driving economic change. (AO1).<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how pollution in oceans is influenced by players driving economic change. (AO2).<br><br>This will be shown by including **well-developed** ideas about pollution in oceans and players driving economic change.<br><br>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.<br><br>**Level 3 (7-9 marks)**<br>Demonstrates **thorough** knowledge and understanding of pollution in oceans and players driving economic change (AO1).<br><br>Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how pollution in oceans is influenced by players driving economic change (AO2).<br><br>This will be shown by including **well-developed** ideas about **either** pollution in oceans **or** players driving economic change and **developed** ideas for the other focus. | 12<br>AO1 x6<br>AO2 x6 | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of pollution in oceans is influenced by players driving economic change could potentially include:<br>Pollution in oceans<br>• variety of pollutants that affect the ocean<br>• Off-shore oil spill causing pollution<br>• Causes of the accumulation of plastic in one ocean gyre<br><br>players driving economic change<br>• role of players in driving economic change (expect range of players; MNC)<br>• Environmental impacts on people and place<br><br>**AO2 – 6 marks**<br>Application of knowledge and understanding to examine how pollution in oceans can be influenced by players driving economic change could potentially include:<br>• The Deepwater Horizon disaster driven by BP, an MNC driving economic change through the production of oil. An estimated 4.9 million barrels of oil was released and was claimed the largest oil spill in history. Economic change was halted during the recovery period as the fishing industry stopped, tourism ceased causing a downward spiral into local communities<br>• Some plastic is accidental discard from fishing boats which are serving global trade routes e.g. 1992 accidental discard of plastic bath toys; however without the MNCs driving economic change in EDCs or LIDCs this wouldn't occur |

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| | | | There are clear attempts to make synoptic links between the content from different parts of the course of study, but these are not always appropriate.<br><br>**Level 2 (4-6 marks)**<br>Demonstrates **reasonable** knowledge and understanding of pollution in oceans and players driving economic change (AO1).<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of pollution in oceans is influenced by players driving economic change (AO2).<br><br>This will be shown by including **developed** ideas about **either** pollution in oceans **or** players driving economic change and **simple** ideas for the other focus.<br><br>There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant.<br><br>**Level 1 (1-3 marks)**<br>Demonstrates **basic** knowledge and understanding pollution in oceans and players driving economic change (AO1).<br><br>Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how pollution in oceans is influenced by players driving economic change (AO2).<br><br>This will be shown by including **simple** ideas about pollution in oceans and players driving economic change.<br><br>There are limited attempts to make synoptic links between content from different parts of the course of study.<br>**0 marks**<br>No response or no response worthy of credit | | • The demand for greater catches of fish in society has driven change in the technology for fishing nets and they no longer biodegrade. Now made of stronger plastic, they breakdown through photodegradation creating significant pollution through nurdles.<br>• National government e.g. Japan driving changes in nuclear power leading to leakage of radioactive material impacting the marine food chain<br>• Accept disagreements evidenced by examples of players minimising oceanic pollution |



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| 9 | | | **Assess how attempts to increase food production can affect water cycles.**<br><br>**Level 4 (10-12 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of food production and water cycles (AO1).<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how attempts to increase food production can affect water cycles (AO2).<br><br>This will be shown by including **well-developed** ideas about food production and water cycles<br><br>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.<br><br>**Level 3 (7-9 marks)**<br>Demonstrates **thorough** knowledge and understanding of food production and water cycles (AO1).<br><br>Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how attempts to increase food production can affect water cycles (AO2).<br><br>This will be shown by including **well-developed** ideas about **either** food production **or** water cycles and **developed** ideas for the other focus.<br><br>There are clear attempts to make synoptic links between the content from different parts of the course of study, but these are not always appropriate. | 12<br>AO1 x6<br>AO2 x6 | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of food production and water cycles could potentially include:<br>Attempts to increase food production<br>• Irrigation and salinization<br>• Deforestation and the impacts on biodiversity<br>• Changing landscapes for food production – e.g. terracing<br>• Water quality from agrochemicals<br>• Use of machinery in food production<br>• GM and hydroponics.<br><br>Water cycles<br>• Distribution and size of stores<br>• Characteristics of main inputs and outputs<br>• Processes within the water cycle<br><br>**AO2 – 6 marks**<br>Application of knowledge and understanding to analyse how attempts to increase food production can affect water cycles could potentially include:<br>• Impacts at different scales.<br>• Over irrigation soaks upper layers increasing evaporation and reducing infiltration, capillary action and ground water storage.<br>• Deforestation and reduction of hedgerows reduces precipitation as transpiration and interception decrease, runoff increases while infiltration, percolation, throughflow and groundwater flow reduce<br>• Use of machinery and compaction of the land reducing infiltration.<br>• Certain types of farming demand more water. |

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| | | | **Level 2 (4-6 marks)**<br>Demonstrates **reasonable** knowledge and understanding of food production and water and carbon cycles (AO1).<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of attempts to increase food production can affect water cycles (AO2).<br><br>This will be shown by including **developed** ideas about **either** food production **or** water cycles and **simple** ideas for the other focus.<br><br>There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant.<br><br>**Level 1 (1-3 marks)**<br>Demonstrates **basic** knowledge and understanding of food production and water cycles (AO1).<br><br>Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of attempts to increase food production can affect water cycles (AO2).<br><br>This will be shown by including **simple** ideas about food production and water cycles<br><br>There are limited attempts to make synoptic links between content from different parts of the course of study.<br><br>**0 marks**<br>No response or no response worthy of credit | | • Increase of built environment with polytunnels, glass houses, livestock sheds and silos (a) vegetation is removed and impacts on water cycle; (b) increase of impermeable surfaces – decreased infiltration/through flow/soil water and groundwater storage - increased run-off/overland flow/channel flow (increased flooding)<br>• Water volumes and quality changing<br>E.g. Small scale/local: food production increases – farming changes that impact on land surfaces; other factors affecting water – include agrochemicals/slurry<br>• Large scale/national or international: Dams/reservoirs impact large areas including drowned tributary valleys, downstream water supply to rivers reduced |



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| 10 | | | **Assess how impacts of volcanic eruptions can affect place identity.**<br><br>**Level 4 (10-12 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of the impacts of volcanic eruptions and place identity (AO1).<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how impacts of volcanic eruptions can affect place identity (AO2).<br><br>This will be shown by including **well-developed** ideas about the impacts of volcanic eruptions and place identity.<br><br>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.<br><br>**Level 3 (7-9 marks)**<br>Demonstrates **thorough** knowledge and understanding of the impacts of volcanic eruptions and place identity (AO1).<br><br>Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how impacts of volcanic eruptions can affect place identity (AO2).<br><br>This will be shown by including **developed** ideas about the impacts of volcanic eruptions and place identity.<br><br>There are clear attempts to make synoptic links between content from different parts of the course of study, but these are not always appropriate. | **12**<br>**AO1 x6**<br>**AO2 x6** | **Indicative content**<br>**AO1 – 6 marks**<br>Knowledge and understanding of the impacts of volcanic eruptions and place identity could potentially include:<br><br>Impacts of volcanic eruptions:<br>• Impacts can include lava + pyroclastic flows, tephra (fine ash → volcanic bombs) lahars, toxic gases, floods, tsunami<br>• Damage + disruption to built environment including infrastructure<br>• Damage + disruption to natural environment<br>• Death + injury to humans<br>Characteristics making up place identity include:<br>• Physical geography<br>• Demographic<br>• Socio-economic<br>• Cultural<br>• Political<br>• Built environment<br><br>**AO2 – 6 marks**<br>Application of knowledge and understanding to analyse how the impacts of volcanic eruptions can affect place identity could potentially include:<br>• Impacts on place identity may depend on the nature and scale of the eruption such as explosive, effusive<br>• Impacts can be short, medium or long term<br>• Impacts on place identity may be negative e.g. disruption or destruction of place e.g. Montserrat / Armero / Chaiten |

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| | | | **Level 2 (4-6 marks)**<br>Demonstrates **reasonable** knowledge and understanding of the impacts of volcanic eruptions and place identity (AO1).<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how impacts of volcanic eruptions can affect place identity (AO2).<br><br>This will be shown by including **sound** ideas about the impacts of volcanic eruptions and place identity.<br><br>There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant.<br><br>**Level 1 (1-3 marks)**<br>Demonstrates **basic** knowledge and understanding of the impacts of volcanic eruptions and place identity (AO1).<br><br>Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how impacts of volcanic eruptions can affect place identity (AO2).<br><br>This will be shown by including **simple** ideas about the impacts of volcanic eruptions and place identity.<br><br>There are limited attempts to make synoptic links between content from different parts of the course of study.<br><br>**0 marks**<br>No response or no response worthy of credit. | | • Impacts on place identity may be positive e.g. development of agriculture on fertile soil, mineral extraction or the tourism e.g. Indonesia, Japan<br>• The impact on place identity may depend on the frequency of eruptions and time available for recovery e.g. Indonesia<br>• The ability of authorities to mitigate against risk, perhaps enabling communities to live with risk may be a factor in influencing place identity e.g. Hawaii<br>• Place identity may be influenced by how a place is branded or rebranded following eruption e.g. Iceland<br>• Place identity may evolve over time and be influenced by a combination of past and present day characteristics in response to eruption, including multiple volcanic eruptions e.g. Etna |



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| 11* | | | **'Changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.' Discuss**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of changes in anthropogenic greenhouse gas emissions since the pre-industrial era and economic development at a national scale.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of changes in anthropogenic greenhouse gas emissions since the pre-industrial era and economic development at a national scale.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of changes in anthropogenic greenhouse gas emissions since the pre-industrial era and economic development since 1850 at a national scale.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of changes in anthropogenic greenhouse gas emissions since the pre-industrial era and economic development at a national scale.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of changes in anthropogenic greenhouse gas emissions since the pre-industrial era and economic development at a national scale could potentially include:<br>• Definition/examples of 'anthropogenic' gas emissions<br>• the balance of anthropogenic emissions around the world and how this has changed in recent history<br>• how anthropogenic emissions influence the global mean energy budget<br>• example(s) of economic development at national scale<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale could potentially include:<br>• Evaluation of different greenhouse gases and their variations in contributions and their contributions to global warming e.g. carbon dioxide increased significantly since 1960, related to changes in ACs in particular, although mix changing. Note China and India despite large contribution to global emissions have relatively low emissions per capita<br>• Depending on case studies used comments relating to population growth, land-use changes and energy demand and mix as well |

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| | | | analysis that is fully accurate of how changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the extent to which changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Relevant concepts are authoritatively discussed.<br><br>**Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to the extent to which changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of how changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale. | | as other principal activities responsible for greenhouse gas emissions<br>• Contribution of factors responsible for changes in emissions over time and space other than economic development e.g. response to international protocols, new technologies, political pressure etc<br>• Prediction of future trends also applicable and may indicate higher level answer<br>• Reasons GHGs cab increase as a result of industrialisation (demand for energy, technological advances, transport and manufacturing, population growth, land use change).<br>• Reference to current situation and countries currently reducing GHG emissions<br>• Higher level answer likely to include discussion about international protocol and political pressure |



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| | | | Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the extent to which changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which changes in anthropogenic greenhouse gas emissions since the pre-industrial era reflect economic development at a national scale.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. | | |



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| | | | **Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | |



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| 12* | | | **Assess the success of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of adaptation strategies to reduce the vulnerability of human populations at risk from climate change | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of adaptation strategies reducing the vulnerability of human populations at risk from climate change could potentially include:<br>• Definition/examples of adaption<br>• Framework of adaption and its implementation in a range of communities e.g. retreat, accommodation and protection strategies<br>• What future homes, offices, cities, transport and economies will look like following adaptation throughout the 21st century<br>• Vulnerability – why people continue to live in areas prone to risk/ability to cope with risk. Two contrasting case studies to illustrate adaptation strategies and associated technological, socio-economic and political challenges associated with them<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the success of adaptation strategies to reduce the vulnerability of human populations at risk from climate change could potentially include:<br>• Success may be judged in a number of different ways e.g. sustainability, cost benefit analysis, appropriate technology etc.<br>• A wide range of case studies can be used to exemplify<br>• Economic development can affect success of strategies e.g. managed retreat in UK, including land use zoning through shoreline management plans, has worked; however, in |

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| | | | Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based of the success of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Relevant concepts are authoritatively discussed.<br><br>**Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions of the success of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence of the success of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Concepts are discussed but their use lacks precision. | | Bangladesh 140 million live on the Ganges-Brahmaputra delta unable to afford to move<br>• Reducing deforestation in EDCs and LIDCs is a more sustainable soft option for reducing vulnerability to climate change (minimise floods, reduce soil erosion e.g. UN's REDD scheme educating and paying local tribes to protect the rainforest); significantly cheaper than hard engineering structures such as steel and concrete structures on slopes or storm surge barriers in the Netherlands. Many challenges in the physical management of large areas as well as training/education needs for local communities to make the schemes successful<br>• Some technological adaptations use simple technology and are environmentally friendly. Training/education needed. Examples rainwater harvesting, use of grey water, sunshades for windows, white walls and ceilings, green roofs etc<br>• In Bangladesh protection of coastal mangroves forests, a priority. However, local communities motivated by economic gain, clearing the forest for agriculture and lucrative fish farming, limiting success of coastal protection measures<br>• In Australia there is much more hard engineering protecting economic centres as well as land use planning to prevent building in flood prone areas, relocation of high value residential and business areas as well as dam projects to mitigate increasing drought.<br>• The success of adaptation projects will be debated and the impacts on vulnerable populations explored to allow credit for evaluation |



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| | | | **Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions of the success of adaptation strategies to reduce the vulnerability of human populations at risk from climate change.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1** | | • Evaluation of other methods of mitigating against climate change |



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| | | | The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | |



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| 13* | | | **Evaluate the extent to which mitigation strategies can successfully reduce the outbreak and impacts of non-communicable disease.**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of mitigation strategies, outbreak and impacts of non-communicable disease.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of mitigation strategies, outbreak and impacts of non-communicable disease.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of mitigation strategies, outbreak and impacts of non-communicable disease.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of mitigation strategies, outbreak and impacts of non-communicable disease.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the success of mitigation strategies to reduce the outbreak and impacts of non-communicable disease. | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of mitigation strategies, outbreak and impacts of non-communicable disease could potentially include:<br>• Non-communicable = not spread from person to person. Non-infectious + non-contagious e.g.CVDs, diabetes, asthma<br>• Mitigation strategies provide a framework to reduce the severity of a disease<br>• Direct strategies (aimed specifically at a particular disease e.g. screeening) + indirect (more generic strategies aimed at overall health improvements including non-communicable diseases e.g. tax)<br>• Mitigation strategies will be informed by<br>o Social, economic and cultural causes<br>o Outbreak rates<br>o Socio-economic impacts<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which mitigation strategies can successfully reduce the outbreak and impacts of non-communicable disease, could potentially include:<br>• Incidence of disease e.g. regional differences within the UK of cancer. For example, south west has the highest incidence for breast cancer, whereas 15% more of those living the north east will suffer from cancer than those in London, the north/south divide in cancer incidence is seen more in women than men. Thus, mitigation needs to concentrate on regions more exposed to risk |



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| | | | Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based of the extent to which mitigation strategies successfully reduce the outbreak and impacts of non-communicable disease.<br><br>Relevant concepts are authoritatively discussed.<br><br>**Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the success of mitigation strategies to reduce the outbreak and impacts of non-communicable disease.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions of the extent to which mitigation strategies successfully reduce the outbreak and impacts of non-communicable disease.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of the success of mitigation strategies to reduce the outbreak and impacts of non-communicable disease.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence of the extent to which mitigation strategies | | • Success at reducing outbreak by tackling cultural causes is a longer process with limited success e.g. education of dangers of smoking cigarettes in reducing incidence of lung cancer in the UK. Varied approach with advertising limited, stark warnings required by law on each packet and products hidden in retail areas, however varying rates of success with incidence rates significantly reducing in males, but increasing in females. Popularity of smoking has fallen, but still nearly 20% of diagnosed cancer cases are smoking related<br>• UK governments' attempts to<br>o reduce social causative factors e.g. sedentary/unhealthy lifestyles<br>o improve healthier diets<br>have been widespread with campaigns e.g. Change4Life, sugar swap, especially focused on the next generation however these schemes seem to be unsuccessful as child obesity is continuing to rise, in 2018 overtaking America's statistics for the first time<br>• Cancer is costing the UK £15 billion a year due to early death, sick or compassionate leave and the cost of care and treatment. Very few strategies have been successful with the exception of early diagnosis and intervention which has led to prolonging of life; however treatment costs have increased.<br>• Cancer rates linked to socio-economic divides e.g. areas with higher deprivation suffer higher cancer incidence e.g. north east and south west England compared to London. Research suggests links with education, and early diagnosis requiring specific mitigation strategies in these areas. Research also suggests in areas of higher deprivation higher |



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| | | | successfully reduce the outbreak and impacts of non-communicable disease.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the success of mitigation strategies to reduce the outbreak and impacts of non-communicable disease.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions of the extent to which mitigation strategies successfully reduce the outbreak and impacts of non-communicable disease.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence. | | incidence of smoking and alcohol consumption contributing to higher incidence of cancer. |



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| | | | **Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | |



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| 14* | | | **'Disease eradication depends on the sustainable use of medicines from nature.' To what extent do you agree?**<br><br>**AO1**<br>**Level 4 (7-9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of the sustainable use of medicines from nature to eradicate disease.<br><br>**Level 3 (5-6 marks)**<br>Demonstrates **thorough** knowledge and understanding of the sustainable use of medicines from nature to eradicate disease.<br><br>**Level 2 (3-4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of the sustainable use of medicines from nature to eradicate disease.<br><br>**Level 1 (1-2 marks)**<br>Demonstrates **basic** knowledge and understanding of the sustainable use of medicines from nature to eradicate disease.<br><br>**0 marks** No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19-24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the sustainable use of medicines from nature to eradicate disease.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the sustainable use of medicines from nature to eradicate disease.<br>Relevant concepts are authoritatively discussed. | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of different medicines from nature, the diseases they are used to eradicate and the sustainability of their use could potentially include:<br>• Examples of specific plants, such as rosy periwinkle, include opium poppy, species of willow and yew, cinchonas evergreen tree, autumn crocus, magnolia, African cherry<br>• Habitats and ecosystems, including conditions for growth especially soil type and climate<br>• Their medical usage/importance in treating specific diseases<br>• Demand for medicinal plants especially in the developing world is very great and the locations of their particular habitats means they are often delivered to market by international trade<br>• Understanding of the sustainability of medicinal plants as resources environmentally; this includes the survival of endangered species, the survival of natural ecosystems, and the erosion of genetic diversity<br>• Understanding of how their use and exploitation by some pharmaceutical TNCs, known as biopiracy, can influence sustainability economically; in some supply areas, such as LIDCs and indigenous communities, economic growth, and addressing issues of poverty and inequality are hindered<br>• Understanding of the complex nature of disease eradication e.g. only smallpox successfully eradicated and without medicines from nature |

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| | | | **Level 3 (13-18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the sustainable use of medicines from nature to eradicate disease.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to the sustainable use of medicines from nature to eradicate disease.<br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7-12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of the sustainable use of medicines from nature to eradicate disease.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the sustainable use of medicines from nature to eradicate disease.<br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1-6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the sustainable use of medicines from nature to eradicate disease.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers secure judgements leading to rational conclusions that offers simple conclusions as to the sustainable use of medicines from nature to eradicate disease. | | **AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which disease eradication depends on the sustainable use of medicines from nature could potentially include:<br>• The impact of overharvesting of wild plants on the survival of wild species – a large number of medicinal plants are sourced from wild populations<br>• Loss of specific habitats/natural ecosystems in which wild plants used for medicines grow as a result of deforestation of tropical rainforest for example<br>• Other conservation issues such as the impact of exploitation on soils, potential flood hazards, biodiversity<br>• Threats to socio-economic sustainability of indigenous populations in some LIDCs as a result of biopiracy<br>• Growing demand for medicines from medicinal plants especially from the large and rapidly growing populations of the developing world (only a few medical species are cultivated) threatens supply<br>• On the other hand, some medical species in use are cultivated (rather than wild) by TNCs which have increasingly responsible/ethical policies towards the environment and indigenous populations in the developing world – plants such as foxglove (dropsy/heart failure) and rosy periwinkle (various cancers)<br>• A number of organisations such as the National Cancer Institute in the USA and the Swedish International Development Authority provide funds for economic development and forest protection (Samoa) ensuring a |



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| | | | Concepts are not discussed or are so inaccurately.<br><br>**0 marks** No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | sustainable supply of medicinal plants and forest conservation treaties such as the Convention on International Trade of Endangered Species of Wild Flora and Fauna also address conservation issues<br>• Currently few diseases are near eradication; polio, measles, guinea worm, yaws and none requiring use of medicines from nature. Eradication hopeful through widespread vaccination. For polio this requires peace and stability in order for health programmes to be completed – only Nigeria, Afghanistan and Pakistan currently hosting polio<br>• Attempts to eradicate disease may depend on strategies at global and national scales e.g. lifestyle campaigns, top-down or bottom-up programmes |



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| 15* | | | **To what extent are oceans hazardous obstacles to human activities?**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of oceans as hazardous obstacles to human activities.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of oceans as hazardous obstacles to human activities.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of oceans as hazardous obstacles to human activities.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of oceans as hazardous obstacles to human activities.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of oceans as hazardous obstacles to human activities.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based of the extent to which oceans are hazardous obstacles to human activities.<br><br>Relevant concepts are authoritatively discussed. | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of oceans as hazardous obstacles to human activities in a variety of contexts could potentially include:<br>• Oceans present hazardous obstacles to human activities – a physically dangerous environment.<br>• Distribution of 21st century piracy and its management<br>• The use of oceans as escape routes for migrants<br>• Wide ranging use of oceans globally<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which oceans are hazardous obstacles to human activities, could potentially include:<br>• Wide range of examples used. Expect analysis over time (within last 20 years) and space<br>• Hazards/obstacles caused by and alleviated by human activity:<br>o Some areas of the oceans will be hazardous during periods of conflict e.g. South China Sea armed clashes between 2012-2015<br>o Piracy a historic and current threat but spatially limited e.g. along trading routes, most recently western Indian Ocean and Malacca and Singapore Straits – spatial limitation reduces extent to which oceans are hazardous, however these routes are particularly hazardous, although this can change e.g. seasonally - lower incidence |

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| | | | **Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of oceans as hazardous obstacles to human activities<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions of the extent to which oceans are hazardous obstacles to human activities.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of oceans as hazardous obstacles to human activities<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence of the extent to which oceans are hazardous obstacles to human activities.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of oceans as hazardous obstacles to human activities<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions of the extent to which oceans are hazardous obstacles to human activities. | | during monsoons; e.g. human activity, international action - maritime coalition between EU, NATO, USA, Russia, China, India, Japan and South Korea to patrol and monitor most dangerous areas, piracy incidence rates reduce dramatically<br>○ For refugees and migrants crossing oceans, the oceans can be the gateway to safety from countries with very poor human rights records.<br>○ Exploitation of vulnerable people [human traffickers] at significant ocean crossing points e.g. from north Africa to Europe across the Mediterranean, southwards from Bangladesh and Myanmar to Thailand, Indonesia and Malaysia or from Vietnam and Sri Lanka to Australia. An international issue: Short term relief eg coastguard/naval rescue missions, provision of refugee camps. Long term - attempts to improve quality of life and freedom in source nations and catching and punishing traffickers.<br>○ Issues or dangers with mineral extraction (gas, oil, and renewable such as wave or tidal<br>○ Is there a future in mining – ferrous and non- ferrous deposit and associated issues.<br>○ Hazardous obstacles – physical conditions: Perils of sea crossings (distance, storms, waves, exposure); poor physical condition of boats; high risk of capsize and drowning<br>• There are many situations where oceans are not hazardous obstacles to human activities: |



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| | | | Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | ○ Relatively secure routes for trade, cruises, sports etc<br>○ Biological resources including fish<br>○ Source of renewable energy – wind, tidal and wave power |



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| 16* | | | **Examine the extent to which the use of ocean energy and mineral resources is sustainable.**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of use of ocean energy, mineral resources and sustainability.**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of use of ocean energy, mineral resources and sustainability.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of use of ocean energy, mineral resources and sustainability.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of use of ocean energy, mineral resources and sustainability.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of use of ocean energy and mineral resources and sustainability.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the extent to which the use of ocean energy and mineral resources is sustainable.<br><br>Relevant concepts are authoritatively discussed. | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of use of ocean energy, mineral resources and sustainability could potentially include:<br>• Use and management of oil and gas<br>• Use and management of wave and tidal energy<br>• Use of sea-bed minerals<br>• Sustainable use – renewable and non-renewable resources<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which the use of ocean energy and mineral resources is sustainable, could potentially include:<br>• Both energy and mineral use needs to be addressed. A candidate that presents an answer worthy of Level 4 in AO2 but only discusses either ocean energy or mineral resources should be penalised within AO1 rather than AO2<br>• Expect range of examples to evidence arguments<br>• Discussion of relevant social, economic and environmental sustainability<br>• Use of tidal energy reduces dependence on fossil fuels and can also improve water quality e.g. South Korea Shiwa Lake scheme However, schemes are expensive and dependent on physical landscape to create a suitable location<br>• Oil and gas exploitation create significant economic growth however, the extraction of |

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| | | | **Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of use of ocean energy and mineral resources and sustainability<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to the extent to which the use of ocean energy and mineral resources is sustainable.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of use of ocean energy and mineral resources and sustainability<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the extent to which the use of ocean energy and mineral resources is sustainable.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of use of ocean energy and mineral resources and sustainability<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers | | both resources and their use in production and for energy are not environmentally sustainable<br>• Sustainable use of wave energy is limited as technology unable to harness energy effectively – although Finnish waveroller works in shallow water, but technology expensive and limited in areas where it can be used<br>• Seafloor mining environmentally unsustainable especially as many areas unknown so impact is unmeasurable. However oceanic minerals exist in higher concentrations so less required, which minimises mining and disturbance making it more sustainable, however disposal of tailings can harm sea-bed ecosystems<br>• Accidental damage – e.g. Deep Water Horizon example or deep water mining, where you can't see the consequences |



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| | | | simple conclusions as to the extent to which the use of ocean energy and mineral resources is sustainable.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | |



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| Question | | | Answer | Mark | Guidance |
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| 17* | | | **Examine the extent to which food is a geopolitical commodity.**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of food as a geopolitical commodity.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of food as a geopolitical commodity.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of food as a geopolitical commodity.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of food as a geopolitical commodity.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of food as a geopolitical commodity.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the extent to which food is a geopolitical commodity.<br><br>Relevant concepts are authoritatively discussed. | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of food as a geopolitical commodity could potentially include:<br>• How food can be considered a geopolitical commodity – candidates may define this<br>• Creating opportunities between countries to ensure food security e.g. agricultural trading policies, WTO and appropriate aid<br>• Role and responsibility of key players such as international/trans-national commercial organisations including agribusiness, TNCs, food retailers and fair trade organisations in influencing the global food system<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which food is a geopolitical commodity could potentially include:<br>• Wide range of examples given, at a range of spatial and temporal scales (accept last 20 years)<br>• Role of food supply shocks, civil unrest, food riots or other events can be used to justify food as a geopolitical commodity<br>• Trade contributing to global peace and security as food trade has increased five-fold in last 50 years. Spatial geography of the trade is unbalanced and dominated by Europe, USA and Asia. Flows ever changing as diets change and populations increase in affluence demanding more imports and a more varied diet<br>• Trading blocs allow promotion of free trade as well as tariffs on imports – these deals can significantly affect farmers in LIDCs and such |

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| | | | **Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of food as a geopolitical commodity.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to the extent to which food is a geopolitical commodity.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of food as a geopolitical commodity.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the extent to which food is a geopolitical commodity.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of food as a geopolitical commodity.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which food is a geopolitical commodity. | | deals can be used to exert control over other nations<br>• WTO is to help promote geopolitical stability however some criticise it for not doing enough, thus limiting geopolitical relationships globally<br>• Food aid can be used to dump surpluses from ACs as well as create a cycle of food aid dependency in LIDCs which reduces incomes for farmers, however it can be lifesaving especially in disaster relief situations. Emergency aid is less likely to have geopolitical ramifications when compared with longer term food aid<br>• Increase in fair trade organisations around the world.<br>• Profit making organisations and food as a geopolitical commodity<br>o Large scale agribusinesses can improve international relations as trade improves, however with demands for sustainable environmental practices these may cause challenges as the environment is often sacrificed for profit.<br>o TNCs can improve geo-political relations; however are footloose and move freely when conditions in the host nation change leading to increased stress on geopolitical relations. TNCs increase geopolitical nature of food as crosses international boundaries and often take over business from local retailers who would function at a significantly smaller scale<br>• Conclusion will vary according to arguments made by candidates. However, expect comments about variation in food as a geopolitical resource spatially, across time or |



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| | | | Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | economic development or to be judged in terms of sustainability.<br>• Though trade, WTO and profit making organisations food has increasingly become a geopolitical resource and is increasingly linked with economic and political stability |



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| Question | | | Answer | Mark | Guidance |
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| 18* | | | **To what extent are the views of Malthus and Boserup relevant to food security in the 21st century?**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of the views of Malthus and Boserup and food security in the 21st century.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of the views of Malthus and Boserup and food security in the 21st century.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of the views of Malthus and Boserup and food security in the 21st century.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of the views of Malthus and Boserup and food security in the 21st century.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the relevance of the views of Malthus and Boserup to food security in the 21st century.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the extent to which | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of the views of Malthus and Boserup and food security in the 21st century could potentially include:<br>• Definition of food security<br>• Theoretical positions on food security, Malthus and Boserup<br>• 21st century food security including changes in food production technology e.g. developments in irrigation, Asian Green Revolution, biotechnology, GM crops, deep displacement fertiliser programmes etc<br>• Knowledge of factors affecting food security<br>  ○ Physical – soil, temperature and growing season, water, altitude, aspect, slope, desertification<br>  ○ Human – land ownership, capital competition, land grabbing, technology, globalisation.<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which the views of Malthus and Boserup are relevant to food security in the 21st century, could potentially include:<br>• A wide range of case studies could be used to illustrate candidate's opinion. Expect variations in levels of economic development<br>• Beneficial changes to 21st century food production (leading to food security) can be interpreted socially, economically, environmentally, politically or sustainably.<br>• Arguments may be presented that Malthusian theories are most relevant in specific areas of the world where technological advance is |

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| | | | the views of Malthus and Boserup are relevant to food security in the 21st century.<br><br>Relevant concepts are authoritatively discussed.<br><br>**Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the relevance of the views of Malthus and Boserup to food security in the 21st century.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to the extent to which the views of Malthus and Boserup are relevant to food security in the 21st century.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of the relevance of the views of Malthus and Boserup to food security in the 21st century.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the extent to which the views of Malthus and Boserup are relevant to food security in the 21st century.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited | | limited due to low levels of economic development, where society is largely dependent on traditional agriculture, and is experiencing significant population growth e.g. parts of Sub-Saharan Africa<br>• Malthusian theory has not been confirmed as increases in food production have been at a geometric, even logarithmic rate at times, far beyond what Malthus predicted<br>• Boserupian theory could be argued to be partially confirmed as 'necessity is the mother of invention' and perceived need for food security has driven changes. But advances in technology often occur in ACs whereas the demand for food is more often in LIDCs e.g. drip irrigation is unaffordable by many LIDC famers, but widely used in ACs.<br>• Advances in food production and food technology to improve food security in LIDCs can be simple, appropriate technologies e.g. 'magic stones' in Burkina Faso, which do not match the perception of advanced invention suggested by Boserup<br>• Food security in the 21st century food may have a wider cost to society eg negative impacts on the environment, impacts on wider human societies e.g. use of DDT affecting water supplies and ecosystems as well as human health which potentially partially support Malthusian theories |



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| | | | accuracy of the relevance of the views of Malthus and Boserup to food security in the 21st century.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which the views of Malthus and Boserup are relevant to food security in the 21st century.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | |



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| 19* | | | **'The impacts of earthquake activity vary with levels of economic development.' How far do you agree with this statement?**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of economic development and impacts of earthquakes.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of economic development and impacts of earthquakes.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of economic development and impacts of earthquakes.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of economic development and impacts of earthquakes.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the impacts of earthquake activity and level of economic development.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether the impacts of earthquake activity vary with level of economic development. | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of economic development and the impacts of earthquakes could potentially include:<br><br>Impacts of earthquakes include social, economic + political + environmental most of which are interlinked:<br>• Economic – damage + destruction to built environment including infrastructure e.g. transport, utilities; disruption to economic activities → loss of employment<br>• Social – death + injury; families separated; loss of employment; disruption to education + health care<br>• Political - ↑ demands placed on government for relief, rehabilitation + reconstruction; changes in political priorities; undermines effective government at different scales e.g. national / regional / local<br>• Environmental – damage + destruction e.g. landslides + avalanches; rivers dammed and then flood; pollution e.g. from damaged sewage, radio-active leaks<br>• Earthquakes vary greatly in their magnitude<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate whether the impacts of earthquake activity vary with level of economic development could potentially include:<br>• Distinguishing between long – short term impacts may indicate Level 3+<br>• Economic impacts – ACs have resources to put into relief, rehabilitation + reconstruction; |

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| | | | Relevant concepts are authoritatively discussed.<br><br>**Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the impacts of earthquake activity and level of economic development.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to whether the impacts of earthquake activity vary with level of economic development.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of the impacts of earthquake activity and level of economic development.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether the impacts of earthquake activity vary with level of economic development.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the impacts of earthquake activity and level of economic development. | | EDCs and LIDCs less so. However mitigation can be successful across economic continuum e.g. vernacular architecture in 'quake prone regions – Iran, Turkey, Nepal.<br>However, economic 'hit' can still be significant e.g. Tōhoku 'quake estimated cost = $US 210 million to Japan + costs for other ACs e.g. California + Oregon coasts.<br>EDCs + LIDCs appear to be less impacted but this is in absolute terms – considered proportionally the costs can be very significant e.g. Gorkha 'quake, Nepal 2015 disrupted planting season → threatened food security.<br>• Social impacts – death = the same awful impact no matter what level of econ. development. Injury can be more significant in EDCs + LIDCs as health care and capacity to cope more challenging e.g. loss of a limb.<br>Separation of families and displacement of families – generally more significant in EDCs + LIDCs as fewer resources to manage this issue.<br>Most 'quake prone countries irrespective of level of econ development have improved their preparation.<br>In general, no matter the level of econ development of the country, the poorer and more marginalised people tend to suffer most from impacts.<br>• Political – most ACs have generally robust and secure governmental organisations that cope. However, extreme magnitude events can pose significant challenges for all levels of econ development. An already insecure political situation can be exacerbated by an earthquake e.g. Nepal 2015.<br>Tōhoku 'quake had political ramifications |



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| | | | Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether the impacts of earthquake activity vary with level of economic development.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | regarding nuclear power – energised lobby against nuclear, mostly in ACs.<br>• Environmental – possibly depends on magnitude more than econ development.<br>• Other factors influence impact such as urban v rural, coastal or inland, nature of relief, time of event, season |
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| 20* | | | **'Over time the ability to manage hazards from volcanic activity increases.' Examine the extent to which this statement is true.**<br><br>**AO1**<br>**Level 4 (7–9 marks)**<br>Demonstrates **comprehensive** knowledge and understanding of risk and ability to manage hazards from volcanic activity over time.<br><br>**Level 3 (5–6 marks)**<br>Demonstrates **thorough** knowledge and understanding of risk and ability to manage hazards from volcanic activity over time.<br><br>**Level 2 (3–4 marks)**<br>Demonstrates **reasonable** knowledge and understanding of risk and ability to manage hazards from volcanic activity over time.<br><br>**Level 1 (1–2 marks)**<br>Demonstrates **basic** knowledge and understanding of risk and ability to manage hazards from volcanic activity over time.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**AO2**<br>**Level 4 (19–24 marks)**<br>Demonstrates **comprehensive** application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how time affects risk and ability to manage hazards from volcanic activity.<br><br>Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether risk | **33**<br>**AO1 x9**<br>**AO2 x24** | **Indicative content**<br>**AO1 – 9 marks**<br>Demonstrating knowledge and understanding of risk and ability to manage hazards from volcanic activity over time could potentially include:<br>• How and why risks from volcanic hazards change over time<br>• Changes in frequency and impacts of volcanic hazards over time<br>• Degree of risk posed by a hazard and the probability of the hazard event occurring<br>• Possible current and future strategies to cope with risks from volcanic hazards (may include illustration from the Park model)<br>• Hazard risk equation<br><br>**AO2 – 24 marks**<br>Application of knowledge and understanding to analyse and evaluate the extent to which risk decreases and ability to manage hazards from volcanic activity increases over time could potentially include:<br>• Expect a range of examples [volcanoes and different levels of economic development].<br>• Over last 150 years risk has increased in many tectonic hazards as frequency has increased. However, consideration needs to be taken of;<br>  ○ Population size as well as density and therefore proximity to risk<br>  ○ Monitoring and recording of events which will affect reliability of data<br>  ○ Human activity e.g. deforestation and landslides<br>• Increased levels of development, technology and education so ability to cope increases, |

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| | | | decreases and ability to manage hazards from volcanic activity increases over time.<br><br>Relevant concepts are authoritatively discussed.<br><br>**Level 3 (13–18 marks)**<br>Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of factors which affect how time affects risk and ability to manage hazards from volcanic activity.<br><br>Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to whether risk decreases and ability to manage hazards from volcanic activity increases over time.<br><br>Relevant concepts are discussed but this may lack some authority.<br><br>**Level 2 (7–12 marks)**<br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound analysis that shows some accuracy of factors which affect how time affects risk and ability to manage hazards from volcanic activity.<br><br>Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether risk decreases and ability to manage hazards from volcanic activity increases over time.<br><br>Concepts are discussed but their use lacks precision.<br><br>**Level 1 (1–6 marks)**<br>Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited | | although this maybe limited as magnitude and predictability can override these factors e.g. Mt St Helen's erupting with a lateral blast was not predictable and could have caused significant damage, however evacuation orders minimised the human impact. Human decision in cost benefit analysis and risk assessment is a significant factor.<br>• Ability to cope can grow with time learning from experience of strategies applied to previous volcanic events to minimise impacts in the future e.g. land use zoning, some maybe developed during relief and rehabilitation period e.g. lava diversion channels in Italy<br>• Historical examples such as Krakatoa would be used to exemplify change over time<br>• There is no way to predict exact date and time of any eruption and this cannot be altered by level of development<br>• Type of eruption can make the event harder to manage – e.g. Icelandic eruption – no control of ash cloud |



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| | | | accuracy of factors which affect how time affects risk and ability to manage hazards from volcanic activity.<br><br>Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether risk decreases and ability to manage hazards from volcanic activity increases over time.<br><br>Concepts are not discussed or are so inaccurately.<br><br>**0 marks**<br>No response or no response worthy of credit.<br><br>**Quality of extended response**<br><br>**Level 4**<br>There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.<br><br>**Level 3**<br>There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.<br><br>**Level 2**<br>The information has some relevance and is presented with limited structure. The information is supported by limited evidence.<br><br>**Level 1**<br>The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear. | | |



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