

GCE

Geography

H481/03: Geographical debates

A Level

Mark Scheme for June 2025

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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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MARKING INSTRUCTIONS

PREPARATION FOR MARKING RM ASSESSOR

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *RM Assessor Online Training: OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are available in RM Assessor
3. Log-in to RM Assessor and mark the **required number** of practice responses (“scripts”) and the **required number** of standardisation responses.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% (traditional 40% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone or the RM Assessor messaging system, or by email.
5. **Crossed Out Responses**
Where a candidate has crossed out a response and provided a clear alternative then the crossed-out response is not marked. Where no alternative response has been provided, examiners may give candidates the benefit of the doubt and mark the crossed-out response where legible.

Rubric Error Responses – Optional Questions

Where candidates have a choice of question across a whole paper or a whole section and have provided more answers than required, then all responses are marked and the highest mark allowable within the rubric is given. Enter a mark for each question answered into RM assessor, which will select the highest mark from those awarded. *(The underlying assumption is that the candidate has penalised themselves by attempting more questions than necessary in the time allowed.)*

Multiple Choice Question Responses

When a multiple choice question has only a single, correct response and a candidate provides two responses (even if one of these responses is correct), then no mark should be awarded (as it is not possible to determine which was the first response selected by the candidate).

When a question requires candidates to select more than one option/multiple options, then local marking arrangements need to ensure consistency of approach.

Contradictory Responses

When a candidate provides contradictory responses, then no mark should be awarded, even if one of the answers is correct.

Short Answer Questions (requiring only a list by way of a response, usually worth only **one mark per response**)

Where candidates are required to provide a set number of short answer responses then only the set number of responses should be marked. The response space should be marked from left to right on each line and then line by line until the required number of responses have been considered. The remaining responses should not then be marked. Examiners will have to apply judgement as to whether a 'second response' on a line is a development of the 'first response', rather than a separate, discrete response. *(The underlying assumption is that the candidate is attempting to hedge their bets and therefore getting undue benefit rather than engaging with the question and giving the most relevant/correct responses.)*

Short Answer Questions (requiring a more developed response, worth **two or more marks**)

If the candidates are required to provide a description of, say, three items or factors and four items or factors are provided, then mark on a similar basis – that is downwards (as it is unlikely in this situation that a candidate will provide more than one response in each section of the response space.)

Longer Answer Questions (requiring a developed response)

Where candidates have provided two (or more) responses to a medium or high tariff question which only required a single (developed) response and not crossed out the first response, then only the first response should be marked. Examiners will need to apply professional judgement as to whether the second (or a subsequent) response is a 'new start' or simply a poorly expressed continuation of the first response.

6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there, then add a tick to confirm that the work has been seen
7. There is a NR (**No Response**) option. Award NR (No Response):
 - if there is nothing written at all in the answer space
 - OR if there is a comment which does not in any way relate to the question (e.g., 'can't do', 'don't know')
 - OR if there is a mark (e.g., a dash, a question mark) which is not an attempt at the question.

Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).

8. The RM Assessor **comments box** is used by your team leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**

If you have any questions or comments for your team leader, use the phone, the RM Assessor messaging system, or e-mail.

9. Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.
10. For answers marked by levels of response:
- To determine the level** – start at the highest level and work down until you reach the level that matches the answer
 - To determine the mark within the level**, consider the following

Descriptor	Award mark
On the borderline of this level and the one below	At bottom of level
Just enough achievement on balance for this level	Above bottom and either below middle or at middle of level (depending on number of marks available)
Meets the criteria but with some slight inconsistency	Above middle and either below top of level or at middle of level (depending on number of marks available)
Consistently meets the criteria for this level	At top of level

11. Annotations

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

12. 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:

1. the specification, especially the assessment objectives
2. the question paper and its rubrics
3. 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.

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.

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.

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.

	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. 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: Clear, developed and convincing analysis that is fully accurate. Clear, developed and convincing interpretation that is fully accurate. 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. 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: Clear and developed analysis that shows accuracy. Clear and developed interpretation that shows accuracy. 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.
Reasonable	Some sound knowledge that demonstrates partially developed understanding that is relevant to the demands to the question. 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: Sound analysis that shows some accuracy. Sound interpretation that shows some accuracy. 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.	There information has some relevance and is presented with limited structure. The information is supported by limited evidence.

	AO1	AO2	AO3	Quality of extended response
Basic	Limited knowledge that is relevant to the topic or question with little or no development. 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: Simple analysis that shows limited accuracy. Simple interpretation that shows limited accuracy. 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.

Question	Answer	Mark	Guidance
1 (a)	Identify <u>three</u> limitations of Fig. 1 as a source of information about responses to climate change. The word cloud shows terms used in relation to responses to climate change. Possible limitations include: • Informal representation (qualitative) – lack of quantitative information. • Validity of data e.g. AC/EDC/LIDC: bias of respondents/source/year • How effective are these responses? • Lack of information on scale and number of responses required for each size of text. • Ambiguous/ill-defined phrases e.g., allowances, Kyoto units, ecology • Words repeated in different sizes leading to confusion e.g. emissions, Kyoto protocol, ecology. • Unclear what the colours refer to. • General phrases giving limited information e.g. cap and trade – where, between which dates.	3 AO3 x3	AO3 – 3 marks 3x1 (SEEN) for three limitations of the data identified through critical questioning of the resource. Annotate as SEEN on script, one for each limitation. If 0 marks are recorded,  needs to be annotated at the end of the answer.
1 (b)	Explain how humans influence the global mean energy balance. Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of how humans influence the global-mean energy balance (AO1). This will be shown by including well-developed ideas about how humans influence the global-mean energy balance. Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of how humans influence the global-mean energy balance (AO1). This will be shown by including developed ideas about how humans influence the global-mean energy balance. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of how humans influence the global-mean energy balance (AO1). There may be simple ideas about humans influence the global-mean energy balance. 0 marks No response or no response worthy of credit	6 AO1 x6	Indicative content AO1 – 6 marks Knowledge and understanding of how humans influence the global-mean energy balance could potentially include: • Consumption of fossil fuels (coal, oil, natural gas) → ↑ GHG concentrations = ↑ terrestrial radiation absorbed ↑ global temperatures. • ↑ deforestation → ↓ albedos → ↑ absorption and warming. • ↑ warming → ↓ sea + land-based snow + ice → ↓ albedos → ↑ absorption and warming. • ↑ warming → ↑ evaporation → ↑ latent heat in atmosphere and ↑ water vapour → ↑ warming (1 degree rise in temperature = 7% more water vapour). • Links to the atmospheric system and mass balance c. 45% of incoming solar radiation reaches + warms Earth's surface. About 66% of outgoing long wave radiation from surface lost to space. Remainder absorbed by GHGs – these stabilise + moderate global temp. • Human actions to restore/reduce impacts of global warming (dynamic equilibrium)

Question		Answer	Mark	Guidance
2	(a)	Identify <u>three</u> limitations of Fig. 2 as a source of information about alcohol-related deaths. Line graph shows alcohol-related deaths for Scotland and England from 2006 – 2013. Possible limitations include: • Relies on country average, doesn't show regional differences. • Relies on annual average, doesn't show change over the year. • Out of date – most recent data 2013, more than decade old. • Time scale is short – less than a decade. • No data source → possible bias • Data presentation – not continuous data – bar graph more appropriate for annual data. • X axis exaggerates the data. • Orientation of graph is not as expected → confusing. • Only relates to England and Scotland – absence of rest of UK. • Reliability of data – how is alcohol-related deaths defined / classified. • Lack of information about; ○ exact number of alcohol-related deaths for each country ○ distribution of deaths by age/gender (demographics)	3 AO3 x3	AO3 – 3 marks 3x1 (SEEN) for three limitations of the data identified through critical questioning of the resource. Annotate as SEEN on script, one for each limitation. If 0 marks are recorded,  needs to be annotated at the end of the answer.
2	(b)	Explain how physical barriers affect dealing with disease. Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of how physical barriers affect dealing with disease (AO1). This will be shown by including well-developed ideas about how physical barriers affect dealing with disease. Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of how physical barriers affect dealing with disease (AO1). This will be shown by including developed ideas about how physical barriers affect dealing with disease. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of how physical barriers affect dealing with disease (AO1). There may be simple ideas about how physical barriers affect dealing with disease. 0 marks No response or no response worthy of credit.	6 AO1 x6	Indicative content AO1 – 6 marks Knowledge and understanding of how physical barriers affect dealing with disease could potentially include: • Physical barriers e.g. mountains, oceans, deserts, lakes • Can be positive and negative. • 'Dealing with disease' can include spread and/or management. • Certain diseases, e.g. malaria will only survive in specific environmental conditions. • Isolated communities e.g. remote island, mountainous region, rainforest = ↑ restriction / challenge in access to healthcare, administer vaccines, delay medical assistance. • Can be a positive factor e.g. CV19, isolation would reduce diffusion of disease either protecting isolated community or slow disease spread to other communities.

Question			Answer	Mark	Guidance
3	(a)		Identify <u>three</u> limitations of <u>Fig. 3</u> as a source of information about piracy. The photograph shows three armed men sitting on a boat with weapons and ammunition. Possible limitations include: • why are they pirates/why does piracy exist? • when photograph was taken – could be out of date. • source / purpose possible bias – seems a ‘staged’ image. Are they ‘pirates’? Could be fishermen armed to defend themselves against pirates? • location – could be bespoke to small area / region. • impact of piracy • only one boat / 3 individuals shown – very small sample of piracy - no quantitative information to use for comparison.	3 AO3 x3	AO3 – 3 marks 3x1 (SEEN) three limitations of the data identified through critical questioning of the resource. Annotate as SEEN on script, one for each limitation. If 0 marks are recorded,  needs to be annotated at the end of the answer.

3	(b)	Explain how wave and tidal energy can be used as a flow resource. Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of how wave and tidal energy can be used as a flow resource (AO1). This will be shown by including well-developed ideas about how wave and tidal energy can be used as a flow resource. Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of how wave and tidal energy can be used as a flow resource (AO1). This will be shown by including developed ideas about how wave and tidal energy can be used as a flow resource. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of how wave and tidal energy can be used as a flow resource (AO1). There may be simple ideas about how wave and tidal energy can be used as a flow resource. 0 marks No response or no response worthy of credit.	6 AO1 x6	Indicative content AO1 – 6 marks Knowledge and understanding of how wave and tidal energy can be used as a flow resource could potentially include: • Tidal energy ○ As tides rise and fall, mechanisms e.g. water wheels / submerged propellers/impellers are turned by flows of water. ○ Need reliable, regular, predictable tides with ample high range, which doesn't limit construction and proximity to population demanding electricity. ○ Barrages can be built across estuaries with gates which open as tide rises trapping water, and as tide falls, stored water released turning turbines generating electricity. • Wave energy • Seabed located e.g. Wave roller – large flaps sticking up from seabed which are moved by the waves in shallow water developing hydraulic pressure powering electricity generator. ⊖ CETO uses buoys linked to hydraulic cylinders, as buoys float up and down on surface, they create hydraulic pressure powering electricity generator.
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Question		Answer	Mark	Guidance
4	(a)	Identify <u>three</u> limitations of Fig. 4 as a source of information about soil moisture. The map shows soil moisture in sugar plantation in Mozambique. Possible limitations include: • What is 'index of surface water'? • What do the categories represent i.e. what is 'very high / low'? • Difficult to distinguish amongst the colours. • No key for the other colours presented on the map. • Lack of information about; ○ when was data collected ○ where was data collected ○ time period of data taken e.g. over week, month, year ○ data used e.g. maximum or averages ○ source e.g. possible bias ○ scale ○ shape and size of fields ○ other factors e.g. climate, soils, irrigation	3 AO3 x3	AO3 – 3 marks 3x1 (SEEN) for three limitations of the data identified through critical questioning of the resource. Annotate as SEEN on script, one for each limitation. If 0 marks are recorded,  needs to be annotated at the end of the answer.
4	(b)	Explain how the globalisation of food creates opportunities. Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of how the globalisation of food creates opportunities (AO1). This will be shown by including well-developed ideas about how the globalisation of food creates opportunities. Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of how the globalisation of food creates opportunities (AO1). This will be shown by including developed ideas about how the globalisation of food creates opportunities. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of how the globalisation of food creates opportunities (AO1). There may be simple ideas about how the globalisation of food creates opportunities. 0 marks No response or no response worthy of credit.	6 AO1 x6	Indicative content AO1 – 6 marks Knowledge and understanding of how the globalisation of food creates opportunities could potentially include: • Technological innovation e.g. global sharing of technology and ideas → ↑ food production • Biotechnology → ↑ tolerance to impacts of global warming. • Developing GM crops which use N efficiently → ↓ applications of fertiliser → ↓ production of CO₂ • ↑ co-operation and co-ordination for short-term food aid → more effective and timely response • ↑ consumer choice with global trade e.g. brands as well as ↑ availability of consumer-driven/seasonal goods e.g. tropical + seasonal produce (strawberries / bananas) in UK • Increased market for food producers of all scales – agribusiness to individual farmer.

Question	Answer	Mark	Guidance
5 (a)	Identify three limitations of Fig. 5 as a source of information about the relationship between disaster and response. The diagram shows a disaster-response curve after Park 1991. Possible limitations include: • It is a model and therefore a simplification. • Lack of information/data about; ○ Assessment of quality of life ○ Region / area applicable to ○ Type of hazard event or details of it e.g. type, duration, severity, multiple hazards ○ What A, B, C relate to/ mean e.g. level of development. • Time periods generalised e.g. several years. • Influence of preparation / modification not shown e.g. evacuations • Factors affecting response not known.	3 AO3 x3	AO3 – 3 marks 3x1 (SEEN) for three limitations of the data identified through critical questioning of the resource. Annotate as SEEN on script, one for each limitation. If 0 marks are recorded,  needs to be annotated at the end of the answer.
5 (b)	Explain the different scales which can be used to measure earthquake magnitude. Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of the different scales used to measure earthquake magnitude (AO1). This will be shown by including well-developed ideas about the different scales used to measure earthquake magnitude. Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of the different scales used to measure earthquake magnitude (AO1). This will be shown by including developed ideas about the different scales used to measure earthquake magnitude. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the different scales used to measure earthquake magnitude (AO1). There may be simple ideas about the different scales used to measure earthquake magnitude. 0 marks No response or no response worthy of credit.	6 AO1 x6	Indicative content AO1 – 6 marks Knowledge and understanding of the different scales used to measure earthquake magnitude could potentially include: • Richter scale (1930s) uses amplitude to determine earthquake magnitude through a logarithmic scale e.g. each whole number is a 10x ↑ in amplitude and a 30-fold ↑ in energy released. Designed to be used with 'local' 'quakes (up to 600 km from seismometer) in a S. Californian context. • Modified Mercalli scale uses earthquake damage and effects to classify magnitude with descriptive comments classifying earthquakes from I-XII. A qualitative assessment. • Moment magnitude scale (MW) uses energy released related to geological properties, it is also logarithmic and uses physical movement caused by earthquakes. Not used for smaller earthquakes, there is no upper limit. Pros and cons of each scale acceptable. To reach L3 – there is no need to include all three scales.

SECTION B – SYNOPTIC QUESTIONS

Question	Answer	Mark	Guidance
6	Examine how the formation of landforms within <u>ONE</u> landscape system you have studied can be modified by climate change (coastal, glaciated or dryland). Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of formation of landforms in <u>ONE</u> landscape system and climate change (AO1). Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how formation of landforms in <u>ONE</u> landscape system can be modified by climate change (AO2). This will be shown by including well-developed ideas about how formation of landforms in <u>ONE</u> landscape system and climate change. There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study. Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of formation of landforms in <u>ONE</u> landscape system and climate change (AO1). Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how formation of landforms in <u>ONE</u> landscape system can be modified by climate change (AO2). This will be shown by including well-developed ideas either formation of landforms in <u>ONE</u> landscape system or climate change and developed ideas for the other focus. 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. Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of formation	12 AO1 x6 AO2 x6	Indicative content AO1 – 6 marks Knowledge and understanding of formation of landforms in <u>ONE</u> landscape system and climate change could potentially include: • Climate change – majority of students likely to focus on warming climate, credit discussions on influences of colder climate. • Both negative + positive modifications relevant. • Increase in surface, atmospheric, and oceanic temperatures leading to: ◦ Unpredictable rainfall patterns affecting rates of weathering, erosion and deposition. ◦ Slower / more rapid formation depending on landform / landscape chosen. • Coastal or Glaciated (inc tundra) or Dryland landscapes. For each landscape system, formation of landforms across a variety of scales occurs e.g. ◦ Coastal: bays, cliffs, beaches, stacks ◦ Glaciated: corries, troughs, moraines, striations ◦ Dryland: wadis, canyons, dunes, ventifacts AO2 – 6 marks Application of knowledge and understanding to analyse how formation of landforms in <u>ONE</u> landscape system can be modified by climate change could potentially include: • Coastal landscapes ◦ ↑ temperatures → ↑ rates of evapotranspiration → ↑ intensity + frequency of storms, ↑ erosion e.g. wave pounding and abrasion → ↑ erosional landforms developing e.g. shore platforms; cliff retreat ◦ As sea levels rise so erosion rates ↑ → ↑ erosion of depositional landforms e.g. beaches; mud flats + salt marshes ◦ ↑ temperatures → ↑ chemical weathering as rates of chemical weathering accelerates. Sea water becoming more acidic affecting

		of landforms in <u>ONE</u> landscape system and climate change (AO1). Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how formation of landforms in <u>ONE</u> landscape system can be modified by climate change (AO2). This will be shown by including developed ideas about either formation of landforms in <u>ONE</u> landscape system or climate change and simple ideas for the other focus. There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant. Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of formation of landforms in <u>ONE</u> landscape system and climate change (AO1). Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how formation of landforms in <u>ONE</u> landscape system can be modified by climate change (AO2). This will be shown by including simple ideas about formation of landforms in <u>ONE</u> landscape system and climate change. There are limited attempts to make synoptic links between content from different parts of the course of study. 0 marks No response or no response worthy of credit.		carbonate rocks in particular. ○ ↓ freeze thaw weathering in some locations as global temperatures rise → slower development e.g. cliff faces + scree slopes ○ ↑ temperatures → negative impacts on coral reefs (bleaching episodes) ○ Climate change → changes in hydrological cycle → sea level (eustatic) + isostatic adjustments → landforms of submergence or emergence • Glaciated landscapes ○ ↑ temperatures, ↑ ablation, ↓ development erosional landforms e.g. corries, and ↑ development depositional landforms e.g. moraines, drumlins ○ ↑ temperatures = ↑ freeze thaw and frost shattering as temperatures rise to around freezing → ↑ load for glaciers + meltwater → ↑ erosion but also deposition e.g. fluvioglacial/glaciofluvial. ○ ↑ temperatures → impacts on periglacial locations e.g. thawing of permafrost; reduction in intensity of frost heave but ↑ in freeze-thaw cycles → active scree formation • Dryland landscapes ○ ↑ temperatures → ↑ rates of evapotranspiration → ↑ frequency of droughts → ↑ impact wind erosion e.g. ↑ impact on deflation and desert pavements ○ Water shortages → ↓ water erosion → slower development of canyons ○ ↑ temperatures, ↑ rates of evapotranspiration, ↑ frequency of droughts → ↓ impact of river erosion e.g. development of wadis NB If the response does not have one of the landscape systems identified in the Spec. (coastal, glaciated, dryland), MAX top L1. Credit is for AO1, climate change. NB Responses must make clear the link between climate change and processes leading to landform formation.
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Question	Answer	Mark	Guidance
7	Examine how the eradication of disease is affected by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity. Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of eradication of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO1). Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how eradication of disease could be affected by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO2). This will be shown by including well-developed ideas about the relationship between eradication of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity. There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study. Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of management of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO1). Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how eradication of disease could be affected by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO2). This will be shown by including well-developed ideas about either eradication of disease or issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity and developed ideas for the other focus. 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. Level 2 (4-6 marks)	12 AO1 x6 AO2 x6	Indicative content AO1 – 6 marks Knowledge and understanding of eradication of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity could potentially include: • Eradication of disease ○ Use of pharmaceutical companies using scientific breakthroughs ○ Strategies for disease eradication ○ Impact of grassroot strategies • Issues of human rights – access to basic rights and freedoms. • Issues of territorial integrity – exclusive and legitimate control over territory. AO2 – 6 marks Application of knowledge and understanding to analyse how the eradication of disease could be affected by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity could potentially include: • Issues of human rights ○ Inequalities in access to new technologies / medicine / treatment as some people/groups excluded or find it a challenge to access. ○ Some groups e.g. those in forced labour stopped from accessing healthcare by employers due to illegality of actions. ○ Some groups due to lack of education less likely to trust new scientific approaches or technology. • Issues of territorial integrity ○ Inequalities in access to new technologies / medicine / treatment as borders hard to cross as contested so some areas unable to access. ○ Some people/groups stopped from accessing healthcare by those in power ○ Areas of contested territory may be difficult to access for health workers as who is in charge, or systems may be difficult to follow

		Demonstrates reasonable knowledge and understanding of eradication of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO1). Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how eradication of disease could be affected by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO2). This will be shown by including developed ideas about either eradication of disease or issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity and simple ideas for the other focus. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of eradication of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO1). Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how eradication of disease could be affected by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity (AO2). This will be shown by including simple ideas about eradication of disease and issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity. There are limited attempts to make synoptic links between content from different parts of the course of study. 0 marks No response or no response worthy of credit.		as sovereignty in isolated regions change or are different ○ Differences across individual nations in terms of access to healthcare and drugs. e.g. contested regions – civil war Positive points appropriate e.g. in a society where there is equal access to healthcare across different groups. Some territories with strong integrity able to manage disease eradication effectively e.g. Mauritius - Malaria
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Question	Answer	Mark	Guidance
8	Examine how pollution in the ocean can be affected by <u>EITHER</u> global trade <u>OR</u> global migration. Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration. (AO1). Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how pollution in the ocean can be affected by <u>EITHER</u> global trade <u>OR</u> global migration (AO2). This will be shown by including well-developed ideas about the relationship between pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration. There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study. Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration (AO1). Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how pollution in the ocean can be affected by <u>EITHER</u> global trade <u>OR</u> global migration (AO2). This will be shown by including well-developed ideas about either pollution in the ocean or <u>EITHER</u> global trade <u>OR</u> global migration and developed ideas for the other focus. 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. Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of	12 AO1 x6 AO2 x6	AO1 – 6 marks Knowledge and understanding of pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration could potentially include: • Pollution in the ocean - combustion of fossil fuels, domestic & industrial pollutants, oil spill, plastics, • Global Trade - current spatial patterns of international, inter-regional and or intra-regional trade • Global Migration - current spatial patterns in number, composition, direction of international, inter-regional and or intra-regional migration AO2 – 6 marks Application of knowledge and understanding to analyse how pollution in the ocean can be affected by <u>EITHER</u> global trade <u>OR</u> global migration could potentially include: • Global Trade ○ Sources of pollution particularly linked to industry concentrated along most popular trade routes e.g. North Atlantic, N. America to Asia ○ Increased pollution where demand is high as concentration of trade focused in this area e.g. Straits of Malacca; Red Sea; Straits of Hormuz • Global Migration ○ Increase plastic pollution where increased migration as migrants may have less money, and plastic items more affordable c/w eco alternatives. ○ Migrants temporary, so unlikely to invest in eco alternative so ↑ plastic pollution. ○ More oil spills where ↑ migration because of ↑ traffic.

		pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration (AO1). Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how pollution in the ocean can be affected by <u>EITHER</u> global trade <u>OR</u> global migration (AO2). This will be shown by including developed ideas about either pollution in the ocean or <u>EITHER</u> global trade <u>OR</u> global migration and simple ideas for the other focus. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration (AO1). Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how pollution in the ocean can be affected by <u>EITHER</u> global trade <u>OR</u> global migration (AO2). This will be shown by including simple ideas about the relationship between pollution in the ocean and <u>EITHER</u> global trade <u>OR</u> global migration. There are limited attempts to make synoptic links between content from different parts of the course of study. 0 marks No response or no response worthy of credit.		
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Question	Answer	Mark	Guidance
9	Examine how food production can affect informal representations of place. Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of food production and informal representations of place. (AO1). Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how food production can affect informal representations of place (AO2). This will be shown by including well-developed ideas about food production and informal representations of place. There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study. Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of food production and informal representations of place (AO1). Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how food production can affect informal representations of place (AO2). This will be shown by including well-developed ideas about either food production or informal representations of place and developed ideas for the other focus. 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. Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of food production and informal representations of place (AO1).	12 AO1 x6 AO2 x6	Indicative content AO1 – 6 marks Knowledge and understanding of food production and informal representations of place could potentially include: - Food production - Attempts to increase food production. - Impacts of food production - Retailing not included - Informal representations of place - TV, film, blogs, art, music, photography, literature, graffiti AO2 – 6 marks Application of knowledge and understanding to examine how food production can affect informal representations of place could potentially include: - positive vs negative representation based on production of food. - Informal representations offering images of rural areas involved in food production including historical examples e.g. John Constable; Jane Austen + contemporary e.g. David Hockney. - music e.g. raps using more terms relating to food production to describe negative impacts on people or environment e.g. 'Band Aid - Feed the World campaign'. - Literature e.g. Thomas Hardy - Media – TV – Clarkson's Farm, Countryfile, Cooking programmes (James Martin, Rick Stein) ↑ content in informal representations of size / scale / inequality of food production e.g. agribusiness in film having negative impact on environment e.g. documentaries / blogs. ↑ focus on environmental impacts of food production – likely to be negative e.g. photography, literature. - Protected Geographic status – e.g. Champagne, Melton Mowbray pork pies.

			Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how food production can affect informal representations of place (AO2). This will be shown by including developed ideas about either food production or informal representations of place and simple ideas for the other focus. There are some attempts to make synoptic links between content from different parts of the course of study, but these are not always relevant. Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of food production and informal representations of place (AO1). Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how food production can affect informal representations of place (AO2). This will be shown by including simple ideas about risks to food security and patterns of social inequality in places. There are limited attempts to make synoptic links between content from different parts of the course of study. 0 marks No response or no response worthy of credit.		
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Question	Answer	Mark	Guidance
10	Examine how volcanic eruptions affect the carbon cycle. Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of volcanic eruptions and the carbon cycle (AO1). Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how volcanic eruptions affect the carbon cycle (AO2). This will be shown by including well-developed ideas about volcanic eruptions and the carbon cycle. There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study. Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of volcanic eruptions and the carbon cycle (AO1). Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how volcanic eruptions affect the carbon cycle (AO2). This will be shown by including well-developed ideas about either volcanic eruptions or the carbon cycle and developed ideas for the other focus. 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. Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of volcanic eruptions and the carbon cycle (AO1). Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some	12 AO1 x6 AO2 x6	Indicative content AO1 – 6 marks Knowledge and understanding of the risks from volcanic eruptions and the carbon cycle could potentially include: • Volcanic eruptions • Lava, pyroclastic flows, gas emissions, tephra, ash, lahars, flooding • Carbon Cycle • Inputs, stores, flows, outputs • Fast and slow carbon cycle • Spatial and temporal scales e.g. global/regional/local and geological vs geomorphological. AO2 – 6 marks Application of knowledge and understanding to analyse how volcanic eruptions affect the carbon cycle could potentially include: • Moving carbon from slow carbon cycle in asthenosphere / mesosphere to fast carbon cycle on earth's surface • ↑ store of carbon dioxide in atmosphere after eruption, vented from underground. • ↑ store of carbon in atmosphere with input of ash from eruption – could last several years with higher VEI eruption and affect global carbon cycle e.g. Pinatubo eruption • Change in surface store of carbon as tephra spread over wide surface area extending from volcano including in seas + oceans • Higher VEI index leading to larger change in store / flow e.g. impact of super volcanic eruptions. • Balance of the CO₂ from eruption vs less carbon emitted through cancellation of flights.

		accuracy of how volcanic eruptions affect the carbon cycle (AO2). This will be shown by including developed ideas about either volcanic eruptions or the carbon cycle and simple ideas for the other focus. There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant. Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of volcanic eruptions and the carbon cycle (AO1). Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how volcanic eruptions affect the carbon cycle (AO2). This will be shown by including simple ideas about volcanic eruptions and the carbon cycle. There are limited attempts to make synoptic links between content from different parts of the course of study. 0 marks No response or no response worthy of credit		
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SECTION C

Question	Answer	Mark	Guidance
11*	‘Climate modelling is essential for an effective human response to climate change.’ Discuss. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of effective human responses to climate change. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of effective human responses to climate change. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of effective human responses to climate change. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of effective human responses to climate change. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how climate modelling is essential for an effective human response to climate change. 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 climate modelling is essential for an effective human response to climate change.	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of effective human responses to climate change could potentially include: - Climate modelling - To predict what future climates might be - Understanding importance of carbon cycle, positive and negative feedback, future emission scenarios and impacts - Impacts of climate change are global, regional and local and dynamic. - Mitigation and adaptation responses Mitigation to cut greenhouse gas emissions (energy efficiency and conservation; fuel shifts and low-carbon energy sources; carbon capture + storage; geoengineering such as stimulating phytoplankton growth in oceans; forestry) Adaptation to reduce vulnerability of human populations at risk e.g. retreat, accommodate, protect. - International policies e.g. IPCC, Kyoto, Paris, Glasgow, Baku meetings in responding to climate change. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to climate modelling is essential for an effective human response to climate change could potentially include: - Expect wide range of effective human response e.g. cost, duration, ease of implementation, geographic scale, environmental impact, ability to implement across development continuum or other appropriate perspective e.g., urban – rural + regional and local.

		Relevant concepts are authoritatively discussed. Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how climate modelling is essential for an effective human response to climate change. 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 climate modelling is essential for an effective human response to climate change. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how climate modelling is essential for an effective human response to climate change. 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 climate modelling is essential for an effective human response to climate change. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how climate modelling is essential for an effective human response to climate change. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers		Carbon modelling essential: - Without modelling cannot appreciate impact, concern, how the carbon cycle works to create effective response. - Ability to model impacts from past and then into future on vulnerable areas / people / species. As an aid to decisions about resource allocation e.g. protection strategies such as flood barriers – cost benefit analysis. - Can encourage urgency to act e.g. spur for international directives / action. Carbon modelling not essential - Adaptation strategies part of evolving technology and demand for increasingly resilient society. <u>Additional</u> strategies to mitigation – adjustments to actual changes and those anticipated – deals with both risks and opportunities - Retreat strategies – locations already experiencing impacts e.g. rising risks of coastal + river valley flooding → managed realignment + zoning. - Accommodation + protection strategies already encouraged e.g. water supply industries → ↑ reservoir capacity; ↓ leakage. Agriculture → conserving soil moisture (zero tillage; drought resistant crops). Health → education re risks from extreme events e.g. heat or cold. Locations already experiencing impacts need responses today e.g. flood barriers; health screening for migrating disease - Opportunities – changes in land-use already responding to current climate changes e.g. expansion of viticulture in UK
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		simple conclusions as to the extent to which climate modelling is essential for an effective human response to climate change. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
12*	To what extent do different agendas shape the debates of climate change over time? AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of the debates of climate change over time. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of the debates of climate change over time. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of the debates of climate change over time. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the debates of climate change over time. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how different agendas shape the debates of climate change over time. 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 what extent different agendas shape the debates of climate change over time. Relevant concepts are authoritatively discussed. Level 3 (13–18 marks)	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of the debates of climate change over time could potentially include: • Historic background of the global warming debate and how it has evolved over time. • Role and possible bias of governments and international organisations, such as the EU, UN, World Bank. • Role and possible bias of the media and different interest groups. • Current focus on policies to achieve Net Zero/Carbon Neutral both for and against. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate to what extent different agendas shape the debates of climate change over time could potentially include: • Expect wide range of evaluation of ‘shape’, measured temporally, spatially, by results or actions. • Scientists ○ Discussion over global warming altered since 1950s with increasing knowledge and concerns over the operation of the carbon cycle. ○ Role of scientists in discovery and developing understanding of climate change, some scientists challenge widely accepted view of anthropogenic global warming but vast majority (c. 97%) accept warming is occurring and that humans are responsible ○ Developments in measuring change e.g. GHGs levels, extent + thickness of sea ice, use of satellites, computer modelling offer increasingly secure data to shape debate. With improved techniques of data collection, understandable and quite appropriate for previous figures to be adjusted to take account of improved techniques. ○ International Panel on Climate Change (IPCC) – the key group for establishing the science of climate change.

		Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how different agendas shape the debates of climate change over time. 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 what extent different agendas shape the debates of climate change over time. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how different agendas shape the debates of climate change over time. 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 what extent different agendas shape the debates of climate change over time. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how different agendas shape the debates of climate change over time Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to what extent different agendas shape the debates of climate change over time. Concepts are not discussed or are so inaccurately.		• Political organisations ◦ The UN - actions against global warming from 1997 (Kyoto Protocol); some international impact, but some key political powers failed to engage with the binding targets e.g. USA and China. ◦ EU initiatives ◦ National + regional governmental policies • Popular media ◦ Newspapers, social media (blogs), TV. Bias occurs depending on political leanings. ◦ Some films have influenced the debate, but this rarely lasts longer than a news cycle e.g. Inconvenient Truth, Before the Flood, Day after Tomorrow • Activist groups + individuals – those campaigning to reduce global warming as well as those not accepting science. ◦ Just Stop Oil; Extinction Rebellion; WWF; National Trust; Christian Aid + Cafod; David Attenborough, Greta Thunberg, John Kerry.
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		0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
13*	Evaluate the advantages and disadvantages of strategies used to respond to disease outbreaks. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of strategies used to respond to disease outbreaks. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of strategies used to respond to disease outbreaks. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of strategies used to respond to disease outbreaks. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of strategies used to respond to disease outbreaks. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the advantages and disadvantages of strategies used to respond to disease outbreaks. 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 advantages and disadvantages of strategies used to respond to disease outbreaks. Relevant concepts are authoritatively discussed.	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of strategies used to respond to disease outbreaks could potentially include: • Disease – any disease (communicable + non-communicable) considered. • Disease outbreak – occurrence of cases of disease in excess of what would normally be expected in a defined community, geographical area or season. The term ‘outbreak’ to be considered broadly and at a variety of scales. • Direct and indirect strategies used by agencies such as governments (national, regional, local) and international agencies e.g. WHO, charities Direct strategies • monitoring of numbers + locations of cases • screening programmes e.g. breast, cervical + bowel cancer in UK • investment in medical technology (diagnostic + treatment) including equipment + drugs Indirect strategies • education • lifestyle changes • environmental monitoring + improvement e.g. elimination of pathogens in water; planning to build healthier neighbourhoods e.g. reducing stagnant water AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the advantages and disadvantages of strategies used to respond to disease outbreaks could potentially include: Either of ‘breadth or depth’ approach valid. Analysis and evaluation of strategies could emerge for example

	Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of factors affecting the advantages and disadvantages of strategies used to respond to disease outbreaks. 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 advantages and disadvantages of strategies used to respond to disease outbreaks. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of factors affecting the advantages and disadvantages of strategies used to respond to disease outbreaks. 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 advantages and disadvantages of strategies used to respond to disease outbreaks. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of factors affecting the advantages and disadvantages of strategies used to respond to disease outbreaks. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the advantages and disadvantages of	from • Water borne diseases in Bangladesh • Malaria in Ethiopia and or Mauritius • Covid 19 pandemic globally • Cancers in UK • Cholera epidemic in Haiti 2010 • Smallpox globally • Polio globally • Guinea worm in West Africa • Ebola outbreaks in Central + West Africa • Measles outbreaks in UK + USA Discussion of contrasting strategies for the same disease relevant.
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		strategies used to respond to disease outbreaks. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
14*	Assess the relative importance of economic factors in influencing the spread of disease. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of factors influencing the spread of disease. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of factors influencing the spread of disease. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of factors influencing the spread of disease. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of factors influencing the spread of disease. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the relative importance of economic factors in influencing the spread of disease. 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 relative importance of economic factors in influencing the spread of disease. Relevant concepts are authoritatively discussed.	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of factors influencing the spread of disease could potentially include: • Economic e.g. affordability of prevention / treatment; research; impacts on housing, infrastructure (e.g. water, energy); diets • Social e.g. lifestyle choices e.g. smoking • Environmental / physical e.g. climate and food • Roles of governments – trans-national, national, regional + local These factors can be considered at a variety of scales, global, national, regional and local. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the relative importance of economic factors in influencing the spread of disease could potentially include: • Economic factors – economic development has tended to lead to decreasing frequency of communicable diseases with an increase in the prevalence of non-communicable diseases. • Epidemiological transition – appealing in its structured progressive view but it is challenged e.g. ability even amongst very wealthy societies to deal with emerging diseases e.g. antibiotic resistance of some bacteria + vulnerability to zoonotic disease. Covid 19 could be quoted to suggest some weakness in developed societies to cope. • Social factors – lifestyle choices but these can be heavily influenced by economic factors • Environmental factors – global warming → diffusion of disease to locations previously free; impact of natural hazards; • Political factors – can be linked with economic and choices made regarding health care

		Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the relative importance of economic factors in influencing the spread of disease. 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 relative importance of economic factors in influencing the spread of disease. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of the relative importance of economic factors in influencing the spread of disease. 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 relative importance of economic factors in influencing the spread of disease. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the relative importance of economic factors in influencing the spread of disease. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the relative importance of economic factors in influencing the spread of disease.		
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		Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
15*	Assess the extent to which socio-economic factors influence the use of the ocean. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of factors influencing the use of the ocean. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of factors influencing the use of the ocean. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of factors influencing the use of the ocean. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of factors influencing the use of the ocean. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the extent to which socio-economic factors influence the use of the ocean could potentially. 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 socio-economic factors influence the use of the ocean could potentially	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of factors influencing the use of the ocean could potentially include: • Use of ocean includes biological resources, energy + mineral resources and oceans as spaces across which people, goods and information flow. • Socio-economic factors include oceans as means of wealth creation, as means of cultural identity or as routes away from and or toward persecution/insecurity freedom/ security respectively • Political factors include management of resources and the use of oceans as spaces where countries challenge each other. • Sustainability of the ‘use’ an important aspect AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which socio-economic factors influence the use of the ocean could potentially include: Socio-economic • Use and management of ocean resources including the values, attitudes + socio-economic status of stake holders especially in the context of biological resources e.g. krill, whales, fish. Culture + heritage can be significant elements in the use of some resources. • Globalisation – oceans played a pivotal part in the process. Economic trading patterns over the centuries and especially 19th century through to today reliant on use of oceans. Also, as routes for submarine cables that carry most digital and voice traffic around the globe.

		Relevant concepts are authoritatively discussed. Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the extent to which socio-economic factors influence the use of the ocean could potentially. 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 socio-economic factors influence the use of the ocean could potentially. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of the extent to which socio-economic factors influence the use of the ocean could potentially. 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 socio-economic factors influence the use of the ocean could potentially. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the extent to which socio-economic factors influence the use of the ocean could potentially. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which socio-economic		Political • Political factors become increasingly influential at a variety of scales. • Trans-national – UNCLOS and establishment of EEZs and other zones extending out from a coastline • Regional bodies such as Arctic Council and in the Antarctic CCAMLR • Organisations with a focus on specific species e.g. International Whaling Commission • Roles of organisations such as Greenpeace, WWF in debates about ocean use • Use of fish stocks a very significant matter of individual nations • Challenges and conflicts between nations using ocean spaces e.g. South China Sea, Baltic • Oceans as escape routes for refugees e.g. English Channel + Mediterranean – overlaps with economic factors • Piracy in some locations Sustainability • Overlaps socioeconomic and political. Growth in awareness of and concern for conservation of oceans and their resources from grassroots and governments. • Establishment of marine reserves, no catch zones, restrictions on exploitation of seabed minerals and drilling for oil + gas involve multiple factors.
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		factors influence the use of the ocean could potentially. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
16*	Evaluate the extent to which the use of biological ocean resources will ever be sustainable. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of the use of biological ocean resources. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of the use of biological ocean resources. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of the use of biological ocean resources. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the use of biological ocean resources. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the use of biological ocean resources. 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 biological ocean resources will ever be sustainable. Relevant concepts are authoritatively discussed. Level 3 (13–18 marks)		Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of the use of biological ocean resources could potentially include: • Tragedy of the commons. • Renewable biological ocean resources e.g. krill, whales, fish • Use and management of resources, resilience of resources and key thresholds for sustainable use. • Management of oceans e.g. EEZ, EFZ, Marine reserves, MPAs. Use of non-biological resources e.g. oil are not accepted. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which the use of biological ocean resources will ever be sustainable could potentially include: • Widely recognised that an ‘ecosystem’ approach to management is most effective as it recognises the <u>interconnectedness</u> of an environment e.g. CCAMLR. • Increasing use made of satellite technology to monitor vast ocean areas • Krill in Southern Ocean. CCAMLR set up in 1982 – generally considered effective in its management of marine resources. Helped develop Marine Protected Areas (MPAs) e.g. Ross Sea; combatted illegal fishing; reduced sea bird by-catch levels; rebuilding fish stocks e.g. toothfish • International Whaling Commission (IWC) – history of success – 1986 moratorium on commercial whaling → ↑ in some species numbers e.g. sperm, blue and humpback. • Fish - Marine Stewardship Council (MSC) certify fisheries that meet sustainability standards. Some fisheries seem to be sustainable e.g. cod in NE Atlantic (Barents Sea and Iceland). Local scale examples of success e.g. Cornish hake + Shetland brown crab. Some two thirds of tuna

Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the use of biological ocean resources. 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 biological ocean resources will ever be sustainable. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of the use of biological ocean resources. 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 biological ocean resources will ever be sustainable. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the use of biological ocean resources. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which the use of biological ocean resources will ever be sustainable. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit.	fisheries assessed at ‘healthy’ levels e.g. skipjack + yellowfin stocks. • Challenge to police ocean areas simply due to vastness of ocean spaces and extreme weather and sea conditions. • Need to distinguish amongst different populations of the same species in different locations. Can be mis-leading to talk about a species in general. • Krill - acoustic surveys suggest severe decline (80%) since 1970s, supporting boom and bust theories. Only 5 countries harvest krill, Norway accounts for ½ annual catch – non-sustainable so far, desire for wider political pressure less as most of the world not involved. Krill trawlers have limited space where they can operate, so sustainably fishing over a large area is unlikely to be achievable. • Whales – some populations continue to be ‘endangered’ e.g. North Pacific Right and others recovering very slowly e.g. some bowhead populations. IWC subject to much political ‘back and forth’ with some whaling nations claiming their current whaling is for ‘scientific purposes’ e.g. Norway. • Fisheries – North Sea cod are identified by most scientists as being fished unsustainably especially in southern regions. Some tuna populations are also over-fished.
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	Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
17*	Assess the extent to which contrasting levels of economic development determine the success of strategies to improve food security. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of contrasting levels of economic development and strategies to improve food security. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of contrasting levels of economic development and strategies to improve food security. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of contrasting levels of economic development and strategies to improve food security. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of contrasting levels of economic development and strategies to improve food security. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how contrasting levels of economic development determine the success of strategies to improve food security. Demonstrates comprehensive application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of contrasting levels of economic development and strategies to improve food security could potentially include: • Food security is the consumption of adequate and good quality foods that make up a healthy diet. • Contrasting places at different levels of economic development e.g. Cuba and UK • Strategies used to improve food security e.g. irrigation, agrotechnology • Large scale through to small scale relevant. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which contrasting levels of economic development determine the success of strategies to improve food security could potentially include: • Expect variety of ‘success’ measures e.g., sustainability from contrasting places/scales. Cuba and the UK are provided as examples but not exclusive. • Cuba • 50% Havana demand met by organic urban agriculture supporting permaculture. • large state-run farms given way to small-scale co-ops, with much land available for this to grow, change in law allowing private ownership. • farmers adopting drought-resistance crops e.g. yams resistant to wind and rain in growing hurricane season – BUT global warming = more frequent and severe hurricanes • UK • Since WW2 significant government resourcing into food production. • Membership of EU also gave access to resources e.g. CAP. • Government(s) ensure supplies of basic foodstuffs in the country.

		conclusions that are evidence based as to the extent to which contrasting levels of economic development determine the success of strategies to improve food security. Relevant concepts are authoritatively discussed. Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how contrasting levels of economic development determine the success of strategies to improve food security. 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 contrasting levels of economic development determine the success of strategies to improve food security. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how contrasting levels of economic development determine the success of strategies to improve food security. 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 contrasting levels of economic development determine the success of strategies to improve food security. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and		• Trade in foods supported and encouraged. • local grass roots projects to encourage local sourcing of food e.g. farmers markets, BUT small scale and not changing habits of nation.
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		understanding to provide a simple analysis that shows limited accuracy of how contrasting levels of economic development determine the success of strategies to improve food security. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which contrasting levels of economic development determine the success of strategies to improve food security. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
18*	To what extent is food security of global significance? AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of the global significance of food security. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of the global significance of food security. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of the global significance of food security. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the global significance of food security. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of the extent to which food security is of global significance. 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 security is of global significance. Relevant concepts are authoritatively discussed. Level 3 (13–18 marks) Demonstrates thorough application of knowledge and	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of the global significance of food security could potentially include: • Food security is the consumption of adequate and good quality foods that make up a healthy diet. • Patterns of food security • Food security – the result of physical and human factors e.g. relief, climate, soils, technology, capital, labour. • Interconnected system of food production e.g. growing, processing, transporting, disposing. • Variety of food production methods • Influence of globalisation, geopolitics, climate change. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which food security is of global significance could potentially include: • globalisation of food industry e.g. sharing of technological ideas, TNCs, food aid / relief, demand for global / unseasonal foods • patterns for food security dynamic and varies between and within countries. • interrelated e.g. growing conditions in Caribbean affect supply in UK, transport affects number of countries – source, destination, and countries / borders / crossings along journey e.g. pinch-points. • Variation of impact of food security at varying levels of development. • Variation of significance at a variety of scales – local/national/international. • Variation of calorie intake, health impact spatially, causes and impacts.

		understanding to provide a clear and developed analysis that shows accuracy of the extent to which food security is of global significance. 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 security is of global significance. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of the extent to which food security is of global significance. 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 security is of global significance. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the extent to which food security is of global significance. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which food security is of global significance. Concepts are not discussed or are so inaccurately.		
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		0 marks No response or no response worthy of credit. Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
19*	‘Explosive volcanic eruptions generate the most dangerous hazards.’ To what extent is this true? AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of hazards generated by volcanic eruptions. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of hazards generated by volcanic eruptions. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of hazards generated by volcanic eruptions. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of hazards generated by volcanic eruptions. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how explosive volcanic eruptions generate the most dangerous hazards. 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 explosive volcanic eruptions generate the most dangerous hazards. Relevant concepts are authoritatively discussed. Level 3 (13–18 marks) Demonstrates thorough application of knowledge and	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of hazards generated by volcanic eruptions could potentially include: • Hazards generated by volcanic eruptions e.g. lava flows, pyroclastic flows, tephra, toxic gases, lahars, floods, tsunamis. • Types of volcanic eruptions e.g. explosive / effusive • Accept all hazards associated with tectonic activity (seismic and volcanic). AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which explosive volcanic eruptions generate the most dangerous hazards could potentially include: • Expect range of ‘dangerous’ e.g. impact on people, over time or different spatial scales • Dangerous to what? Life, injuries, property, economic activities, culture, political situation • Yes – higher VEI scores with more pyroclastic flows travelling longer distances (up to 20km from crater) and faster than lava flows (500km/hr) • Yes – danger over larger area e.g. Pinatubo impacts felt globally → ash carried around world affecting crops and air temperatures. 1816 – ‘year without a summer’ in northern hemisphere → Mt Tambora, Indonesia eruption 1815 • Yes / no – large effusive eruptions e.g. E15 not dangerous to human life but more damaging to economy → interruption to movements of goods and people • Yes / no – effusive eruptions on Hawaii affect large areas of the island – agriculture, transport, housing • No - Lake Nyos poisonous gas hazard – very dangerous as least understood and not predictable. • Depends on factors such as level of economic resourcing in an area – AC / EDC / LIDC • Seismic hazards – factors affecting level of danger, e.g. magnitude, preparedness, population density, wealth.

		understanding to provide a clear and developed analysis that shows accuracy of how explosive volcanic eruptions generate the most dangerous hazards. 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 explosive volcanic eruptions generate the most dangerous hazards. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how explosive volcanic eruptions generate the most dangerous hazards. 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 explosive volcanic eruptions generate the most dangerous hazards. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how explosive volcanic eruptions generate the most dangerous hazards. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which explosive volcanic eruptions generate the most dangerous hazards. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit.		
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		Quality of extended response Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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
20*	Evaluate the extent to which earthquakes generate distinctive hazards. AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of hazards generated by earthquakes. Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of hazards generated by earthquakes. Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of hazards generated by earthquakes. Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of hazards generated by earthquakes. 0 marks No response or no response worthy of credit. AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how earthquakes generate distinctive hazards. 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 earthquakes generate distinctive hazards. Relevant concepts are authoritatively discussed. Level 3 (13–18 marks) Demonstrates thorough application of knowledge and	33 AO1 x9 AO2 x24	Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of hazards generated by earthquakes could potentially include: • Variety of earthquake activity → shallow- / deep-focus • Ground shaking and displacement, liquefaction, landslides and avalanches, tsunamis, flooding. • Contrasts amongst plate boundaries. • All movements of magma generate seismic activity. • Some human activity generates seismic activity e.g. mine collapse, shale gas fracking. AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which earthquakes generate distinctive hazards could potentially include: • Measures of ‘distinctive’ could be between earthquake events, or in comparison to volcanic eruptions. Accept either argument. • Magnitude an important factor BUT earthquakes don’t exist in isolation from other factors e.g. geology, relief, climate, human factors. • Earthquakes produce ground shaking – distinctive to earthquakes alone. Range of shaking in different earthquake events – smaller events can be caused by human activity e.g. mining, however larger events of ground shaking only caused by earthquakes. • Displacement, rifts, fault lines also unique to earthquakes. • Liquefaction unique to earthquakes, no other tectonic hazard causes this – can be man-made (e.g. Tokyo – land reclamation) or natural (e.g. Mexico City) – largely related to geology. • Other hazards produce landslides and avalanches e.g. heavy rainfall events or thawing / freezing temperatures – largely related to relief and geology e.g. Nepal 2015. • Tsunamis can also be caused by volcanic eruptions e.g. Tonga 2022, although nearly all eruptions accompanied by seismic activity. However, larger tsunamis generally created by earthquakes e.g. Japan 2011.

		understanding to provide a clear and developed analysis that shows accuracy of how earthquakes generate distinctive hazards. 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 earthquakes generate distinctive hazards. Relevant concepts are discussed but this may lack some authority. Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how earthquakes generate distinctive hazards. 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 earthquakes generate distinctive hazards. Concepts are discussed but their use lacks precision. Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how earthquakes generate distinctive hazards. Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which earthquakes generate distinctive hazards. Concepts are not discussed or are so inaccurately. 0 marks No response or no response worthy of credit. Quality of extended response		Earthquakes also generate effects on landforms and landscapes, including the development of escarpments and rift valleys.
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		Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. Level 3 There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence. Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence. Level 1 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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Assessment Objectives (AO) grid

Candidates answer **two** of questions 1 to 5, **two** of questions 6 to 10 and **two** of questions 11 to 15. This has been considered in the totals indicated below.

Question	AO1	AO2	AO3	Marks
1a	0	0	3	3
1b	6	0	0	6
2a	0	0	3	3
2b	6	0	0	6
3a	0	0	3	3
3b	6	0	0	6
4a	0	0	3	3
4b	6	0	0	6
5a	0	0	3	3
5b	6	0	0	6
6	6	6	0	12
7	6	6	0	12
8	6	6	0	12
9	6	6	0	12
10	6	6	0	12
11*	9	24	0	33
12*	9	24	0	33
13*	9	24	0	33
14*	9	24	0	33
15*	9	24	0	33
16*	9	24	0	33
17*	9	24	0	33
18*	9	24	0	33
19*	9	24	0	33
20*	9	24	0	33
Total	42	60	6	108

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