Oxford Cambridge and RSA

GCE

Geography

H481/03: Geographical debates

Advanced GCE

Mark Scheme for Autumn 2021

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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.

1. Annotations

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

2. Subject Specific Marking Instructions

INTRODUCTION

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

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

You should ensure that you have copies of these materials.

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

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

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.

	AO1	AO2	AO3	Quality of extended response
Reasonable	Some sound knowledge that demonstrates partially developed understanding that is relevant to the demands to the question. 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.
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 <u>Fig. 1</u> as a source of information about the greenhouse effect.** Possible limitations include: • GHGs present throughout the atmosphere not just in an upper level layer • No indication of different types and efficacy of GFGs • Nothing to indicate where the GHGs originate from - natural or anthropogenic • No scale to show the relevance of the width of arrows – i.e. absence of quantification • Lack of information about the source e.g. date • No labelling of incoming radiation flows as short-wave	**3** **AO3 x3**	**AO3 – 3 marks** 3x1 (✓) for limitations of the data identified through critical questioning of the resource.
1	(b)		**Explain how geoengineering can cut global emissions of greenhouse gases.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of how geoengineering can cut global emissions of greenhouse gases (AO1). This will be shown by including **well-developed** ideas about how geoengineering can cut global emissions of greenhouse gases. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of how geoengineering can cut global emissions of greenhouse gases (AO1). This will be shown by including **developed** ideas about how geoengineering can cut global emissions of greenhouse gases.	**6** **AO1 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of how geoengineering can cut global emissions of greenhouse gases could potentially include: • geoengineering = use of technology to modify environment on a <u>large-scale</u> • two types of strategy - ↓ amount of insolation entering atmosphere; ↓ level of CO_2 in atmosphere – NB it is only geoengineering that reduces emissions of GHGs that is relevant • carbon removal: fertilising oceans with iron to absorb carbon dioxide through increased phytoplankton growth • carbon capture: developing plastic trees which absorb and store carbon dioxide • enhanced weathering – crushing huge quantities of some types of rock to ↑ surface

			Level 1 (1–2 marks) Demonstrates **basic** knowledge and understanding of how geoengineering can cut global emissions of greenhouse gases (AO1). There may be **simple** ideas about how geoengineering can cut global emissions of greenhouse gases. **0 marks** No response or no response worthy of		area → accelerated weathering absorbing CO_2 to form carbonates - sequestration

Question			Answer	Mark	Guidance
2	(a)		**Identify <u>three</u> limitations of <u>Fig. 2</u> as a source of information about the global distribution of people living with dementia in 2015.** Possible limitations include: • Is there a standard definition of 'dementia' used across the world? Different locations may have different definitions. • Unequal access to health care so diagnosis rates likely to vary. • Possible bias – lack of information about purpose and author • Regions large and not comparable in geographical size - regions have different sized populations so number per 1000 people would be more helpful • Intra-continental differences masked • Map projection distorts in favour of northern hemisphere • Unclear if Asia includes Australia, NZ and Pacific nations	**3** **AO3 x3**	**AO3 – 3 marks** 3x1 (✓) for limitations of the data identified through critical questioning of the resource. Do not accept a limitation that the resource is out of date.
2	(b)		**Explain the environmental causes of <u>one</u> communicable disease.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of the environmental causes of one communicable disease (AO1). This will be shown by including **well-developed** ideas about the environmental causes of one communicable disease. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and	**6** **AO1 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of the environmental causes of one communicable disease could potentially include: • environmental factors, can include; climate rainfall, temperatures, relief, natural hazards • communicable disease = transmitted from one person to another directly or indirectly or by means of vectors • malaria – warm humid conditions required as well as stagnant surface water which is required for

			understanding of the environmental causes of one communicable disease (AO1). This will be shown by including **developed** ideas about the environmental causes of one communicable disease. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of the environmental causes of one communicable disease (AO1). There may be **simple** ideas about the environmental causes of one communicable disease. **0 marks** No response or no response worthy of credit.		breeding mosquitoes. • diarrhoea/cholera/typhoid/ guinea worm – water contaminated with bacteria / water fleas, often occurring after or during flood events • candidates could refer to the role of an appropriate natural hazard and link to a communicable disease e.g. flooding, drought or monsoon rains Candidates should not be penalized for discussing more than one communicable disease.

Question			Answer	Mark	Guidance
3	(a)		**Identify <u>three</u> limitations of <u>Fig. 3</u> as a source of information about the pattern of circulation in the North Atlantic.** Possible limitations include: • Scale not added • Diagram doesn't show if currents are shallow or deep • Diagram doesn't show if currents are warm or cold • No key provided for width of current or meaning of a dashed current. • Speed of flow not shown • No inflow to the Atlantic from the Mediterranean shown	**3** **AO3 x3**	**AO3 – 3 marks** 3x1 (✓) for limitations of the data identified through critical questioning of the resource.
3	(b)		**Explain the distinctive features of guyots.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of the distinctive features of guyots (AO1). This will be shown by including **well-developed** ideas about the distinctive features of guyots. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the distinctive features of guyots (AO1). This will be shown by including **developed** ideas about the distinctive features of guyots. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of	**6** **AO1 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of the distinctive features of guyots could potentially include: • Once rose above the surface of the ocean • Erosion reduced height to below sea level • Due to erosion, peak has a flat top • Over time the weight of the guyots on the oceanic crust may cause it to subside into the upper mantle • Accumulation of sediment can bury these peaks over time e.g. within the Atlantic ocean • Many are of volcanic origin, often part of mid-ocean ridge → igneous geology

			the distinctive features of guyots (AO1). There may be **simple** ideas about the distinctive features of guyots. **0 marks** No response or no response worthy of credit.		

Question			Answer	Mark	Guidance
4	(a)		**Identify <u>three</u> limitations of <u>Fig. 4</u> as a source of information about the global distribution of organic agriculture in 2015.** Possible limitations include: • original size of each country/continent is distorted so very difficult to accurately appreciate significance of organic area • no scale • no indication if organic agriculture produced is subsistence farming or bound for the domestic or international market. • difficulty in obtaining accurate and reliable data in some areas of the world • no historical data available for comparison of change over time	**3** **AO3 x3**	**AO3 – 3 marks** 3x1 (✓) for limitations of the data identified through critical questioning of the resource. Do not accept resource is out of date as a limitation.
4	(b)		**Explain how food production methods can vary within a country or region.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of how food production methods can vary within a country or region (AO1). This will be shown by including **well-developed** ideas about how food production methods can vary within a country or region. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of how food production methods can vary within a country or region (AO1). This will be shown by including **developed** ideas about	**6** **AO1 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of how food production methods can vary within a country or region could potentially include: • Wide range of farming methods within just one country • Any one farming system can include several different features e.g. market gardening in the Vale of Evesham • Arable and pastoral systems work alongside each other at all scales • Subsistence and commercial systems can exist within a local distance e.g. wet-rice farming in India close to commercial rice farming, or subsistence crofting farming in Scotland close to

			how food production methods can vary within a country or region. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of how food production methods can vary within a country or region (AO1). There may be **simple** ideas about how food production methods can vary within a country or region. **0 marks** No response or no response worthy of credit.		commercial dairy farming • Shifting cultivation in the Brazilian rainforest, close to sedentary cattle ranching • Extensive and intensive farming systems within close distance to each other e.g. large scale commercial (Fens, Prairies) and market gardening nearer cities (Cambridge, Winnipeg) Credit should be given for any relevant answers.

Question			Answer	Mark	Guidance
5	(a)		**Identify <u>three</u> limitations of <u>Fig. 5</u> as a source of information about rift valleys.** Possible limitations include: • lack of information about the source leading to potential bias based on who took the photo and for what purpose • lack of information about geology • no scale e.g. height of rock faces, width of flat floor (ranging pole / person) • only a very short section visible – unclear as to the overall scale / impact of the landscape • how representative is this example	**3** **AO3 x3**	**AO3 – 3 marks** 3x1 (✓) for limitations of the data identified through critical questioning of the resource.
5	(b)		**Explain the role of convection currents in the asthenosphere.** **Level 3 (5-6 marks)** Demonstrates **thorough** knowledge and understanding of the role of convection currents in the asthenosphere (AO1). This will be shown by including **well-developed** ideas about the role of convection currents in the asthenosphere. **Level 2 (3-4 marks)** Demonstrates **reasonable** knowledge and understanding of the formation and role of convection	**6** **AO1 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of the role of convection currents in the asthenosphere could potentially include: • asthenosphere = layer in upper mantle c. 100 down to c. 300km. Solid but flows under pressure thus behaving like a very viscous material over very long time scales • Shallow and deep convection currents in the asthenosphere caused by heat generated in the Earth's interior – left over from Earth's formation + unstable radioactive isotopes • Viscous asthenosphere moves carrying the

			currents in the asthenosphere (AO1). This will be shown by including **developed** ideas about the role of convection currents in the asthenosphere. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of the role of convection currents in the asthenosphere (AO1). There may be **simple** ideas about the formation and role of convection currents in the asthenosphere **0 marks** No response or no response worthy of credit.		overlying solid lithosphere and crust with it • Upwelling plumes of hot material at mid-oceanic ridges are warm → higher elevation than colder more dense plate material further away → gravity causes higher ridge to 'push' away the lithosphere lying further away from the ridge. Diverging convection currents may operate in these locations. • Older colder plates sink at subduction zones because as they cool → become denser than underlying asthenosphere → 'pull' the rest of the warmer plate along behind it. Converging currents may operate in these locations. • Credit point that research into how plates move ongoing and questions over exactly how convection operates remain

SECTION B – SYNOPTIC QUESTIONS

Question			Answer	Mark	Guidance

6			**Examine how climate change may be impacting the water cycle in tropical rainforests.**
			
			Level 4 (10-12 marks)
			Demonstrates **comprehensive** knowledge and understanding of climate change and the water cycle in tropical rainforests (AO1).
			
			Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how climate change may be impacting the water cycle in tropical rainforests (AO2).
			
			This will be shown by including **well-developed** ideas about how climate change may be impacting the water cycle in tropical rainforests.
			
			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 climate change and the water cycle in tropical rainforests (AO1).
			
			Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how climate change may be impacting the water cycle in tropical rainforests (AO2).
			
			This will be shown by including **well-developed** ideas about **either** climate change **or** the water cycle in tropical rainforests and **developed** ideas for the other focus.
			
			There are clear attempts to make synoptic links
				12
				AO1 x6
				AO2 x6
					Indicative content
					AO1 – 6 marks
					Knowledge and understanding of climate change and the water cycle in tropical rainforests could potentially include:
					• Climate change
					  ○ increase in surface, atmospheric and oceanic temperatures
					  ○ rising sea level
					  ○ increasing atmospheric water vapour
					  ○ climate modelling to show influence of positive and negative feedback
					• Water cycle in the tropical rainforest
					  ○ water cycles specific to tropical rainforests
					  ○ physical factors affecting the flows and stores in the water cycle, including temperature
					  ○ explore changes to the flows and stores within the water cycle caused by natural factors
					
					AO2 – 6 marks
					Application of knowledge and understanding to analyse how climate change may be impacting the water cycle in tropical rainforests could potentially include:
					• tropical rainforests have high average annual temperatures and high average annual rainfall, with little or no 'dry' season.
					• Some areas are predicted to be much drier as a result of climate change with a pronounced dry season.
					• Precipitation may be less frequent and more intense leading to increased run-off and reduced stores of water. This could cause increased stress on plants and reduced ability to grow as water supplies limited
					• precipitation feedback loops likely to change as precipitation events are less frequent, but high

			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 climate change and the water cycle in tropical rainforests (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how climate change may be impacting the water cycle in tropical rainforests (AO2). This will be shown by including **developed** ideas about **either** climate change **or** the water cycle in tropical rainforests 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 climate change and the water cycle in tropical rainforests (AO1). Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how climate change may be impacting the water cycle in tropical rainforests (AO2). This will be shown by including **simple** ideas about climate change and the water cycle in tropical rainforests. 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.		temperatures cause continued high rates of evaporation from interception storage on leaf surfaces and transpiration from the soil • continued high temperatures will continue to allow high capacity for water storage in the atmosphere, however vegetation storage likely to decrease

Question			Answer	Mark	Guidance
7			**Examine how the prevalence of non-communicable disease is influenced by issues of <u>EITHER</u> human rights <u>OR</u> territorial integrity.** **Level 4 (10-12 marks)** Demonstrates **comprehensive** knowledge and understanding of prevalence of non-communicable disease and issues of either human rights or territorial integrity (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how the prevalence of non-communicable disease is influenced by issues of either human rights or territorial integrity (AO2). This will be shown by including **well-developed** ideas about the relationship between prevalence of non-communicable disease and issues of either human rights or 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 prevalence of non-communicable disease and issues of either human rights or territorial integrity (AO1). Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how the prevalence of non-communicable disease is influenced by issues of either human rights or territorial integrity (AO2). This will be shown by including **well-developed** ideas about **either** prevalence of non-communicable disease	**12** **AO1 x6** **AO2 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of prevalence of non-communicable disease and issues of either human rights or territorial integrity could potentially include: • Non-communicable disease – a disease that cannot be spread between people • Prevalence of non-communicable disease such as diabetes, CVD, types of cancer. As countries develop economically the frequency of communicable diseases decreases, while the prevalence of non-communicable diseases rises • Issues of human rights: ○ Basic rights and freedoms to which all people are entitled including access to medical care, food, education, shelter, gender equality • Current spatial patterns of human rights issues can influence prevalence of non-communicable disease • Global governance of human rights has consequences for citizens and places • Issues of territorial integrity: ○ The concept of territorial integrity is that the defined territory of a state, over which it has exclusive and legitimate control, is inviolable ○ Challenges to territorial integrity include contested territory, claims for separatism, ethnic partitioning, ethnic conflict, economic power of TNCs

			or either human rights or 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)** Demonstrates **reasonable** knowledge and understanding of prevalence of non-communicable disease and issues of either human rights or territorial integrity (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how the prevalence of non-communicable disease is influenced by issues of either human rights or territorial integrity (AO2). This will be shown by including **developed** ideas about **either** prevalence of non-communicable disease **or** either human rights or 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 prevalence of non-communicable disease and issues of either human rights or territorial integrity (AO1). Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how the prevalence of non-communicable disease is influenced by issues of either human rights or territorial integrity (AO2). This will be shown by including **simple** ideas about the prevalence of non-communicable disease and issues of either human rights or territorial integrity.		○ Global governance of sovereignty and territorial integrity has consequences for citizens and people **AO2 – 6 marks** Application of knowledge and understanding to analyse how the prevalence of non-communicable disease is influenced by issues of either human rights or territorial integrity could potentially include: Human rights: • Prevalence of non-communicable disease can be reduced or increased by human rights issues • Where human rights are upheld such as in many parts of ACs and EDCs, reduction in the prevalence of non-communicable diseases may be influenced by: ○ access to education / awareness of potential medical conditions ○ access to medical / health care ○ food security and nutritional advice ○ gender equality in access to education and health care ○ lower levels of poverty ○ better access to effects of government strategies • Even in countries where human rights are upheld there may be spatial and temporal variations in prevalence of non-communicable disease related to:

			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.		○ Distribution of elderly populations ○ Poor diet / overnutrition ○ Level of alcohol / tobacco consumption ○ Air pollution • In the developing world in some LIDCs and EDCs where human rights are not upheld, overnutrition is a significant health problem and there is increasing prevalence of non-communicable diseases such as CVD, type-2 diabetes, cancer Territorial integrity: • Prevalence of non-communicable diseases can be reduced or enhanced by territorial integrity issues • Where territorial integrity is secure and there is political stability, prevalence of non-communicable diseases may be affected by the effectiveness of state apparatus such as the health care system, education provision, gender equality and wealth / ability of government to put in place effective strategies • Where territorial integrity is insecure, especially in the conflict zones, prevalence of non-communicable diseases may be affected by military action restricting access to national government and international organisations that might otherwise mitigate against non-communicable diseases • In conflict zones prevalence may be increased or decreased depending on access to food, clean

					water, living conditions, threats to food security and medical facilities • NGOs and other organisations, WHO / UNICEF, involved in intervention may help to reduce prevalence of non-communicable disease by supporting populations, e.g. IDPs, especially if threat to territorial integrity is long-term.

Question			Answer	Mark	Guidance

8			**Examine how oceans influence patterns of <u>EITHER</u> global trade <u>OR</u> global migration.**
			
			Level 4 (10-12 marks)
			Demonstrates **comprehensive** knowledge and understanding of oceans and patterns of either global trade or global migration. (AO1).
			
			Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how oceans influence patterns of either global trade or global migration (AO2).
			
			This will be shown by including **well-developed** ideas about the relationship between oceans and patterns of either global trade or 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 oceans and patterns of either global trade or global migration (AO1).
			
			Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how oceans influence patterns of either global trade or global migration (AO2).
			
			This will be shown by including **well-developed** ideas about **either** oceans **or** patterns of either global trade or 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.
				12
				AO1 x6
				AO2 x6
					AO1 – 6 marks
					Knowledge and understanding of oceans and patterns of either global trade or global migration could potentially include:
					• oceans;
					  ○ the global distribution of the world's oceans, their areas and volumes
					  ○ the global distribution of warm and cold surface currents
					
					• patterns of global trade
					  ○ Current spatial patterns in the direction and components of international trade, including examples of intra-regional – must be linked to oceans as question specifies
					
					• patterns of global migration
					  ○ Current spatial patterns in the numbers, composition and direction of international migration flows, including examples of intra-regional – must be linked to oceans as question specifies
					
					AO2 – 6 marks
					Application of knowledge and understanding to analyse how oceans influence patterns of either global trade or global migration could potentially include:
					• Oceans provide opportunities for flows of trade and migration directly for countries with a coastline and indirectly for land-locked countries
					• the size of the ocean can influence patterns e.g. shorter distances are more manageable and cheaper so likely to have increased traffic e.g. migration flows from South-East Asia to Australia
					• The distribution of currents can influence routes making them more treacherous or faster and cheaper depending on the

			Level 2 (4-6 marks) Demonstrates **reasonable** knowledge and understanding of oceans and patterns of either global trade or global migration (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how oceans influence patterns of either global trade or global migration (AO2). This will be shown by including **developed** ideas about **either** oceans **or** patterns of either global trade or 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 oceans and patterns of either global trade or global migration (AO1). Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how oceans influence patterns of either global trade or global migration (AO2). This will be shown by including **simple** ideas about the relationship between oceans and patterns of either global trade or 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.		direction of travel • These patterns are affected by many other factors which may have a greater influence e.g. political or socio-economic factors, the distribution of 21st century piracy and its management • Globalisation resulting in time space compression as technological developments have reduced time taken for ships to cross. • New routes developing such as the use of ice breakers in the Arctic. • New ocean routes for migrant crossings

Question			Answer	Mark	Guidance
9			**Examine how physical factors affect food security in any <u>ONE</u> landscape system you have studied.** **Level 4 (10-12 marks)** Demonstrates **comprehensive** knowledge and understanding of the physical factors that affect food security in one landscape system. (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how physical factors affect food security in one landscape system (AO2). This will be shown by including **well-developed** ideas about the physical factors that affect food security and one landscape system. 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 the physical factors that affect food security in one landscape system (AO1). Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how physical factors affect food security in one landscape system (AO2). This will be shown by including **well-developed** ideas about **either** the physical factors that affect food security **or** one landscape system and **developed** ideas for the other focus. There are clear attempts to make synoptic links between the content from different parts of the course	**12** **AO1 x6** **AO2 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of the physical factors that affect food security in any **one** landscape system could potentially include: • Producing sufficient food is heavily influenced by the physical environment • Physical factors that affect food security include geology, soil, length of growing season, temperature, precipitation, water supply, altitude, aspect, slope angle • The physical factors vary spatially within coastal, glaciated and dryland landscape systems • Physical factors can also change over time in both the short- and long-term; they may be affected by natural hazards, climate change and the impact of human activity • 'Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active an healthy life' (UN FAO definition) • Whilst one particular physical factor can influence food security it is often a range of physical factors in combination - also with human factors - that affect food security • Physical factors may have a positive or negative effect on food security **AO2 – 6 marks**

			of study but these are not always appropriate. **Level 2 (4-6 marks)** Demonstrates **reasonable** knowledge and understanding of the physical factors that affect food security in one landscape system (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how the physical factors that affect food security in one landscape system (AO2). This will be shown by including **developed** ideas about **either** the physical factors that affect food security **or** one landscape system 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 the physical factors that affect food security in one landscape system (AO1). Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how the physical factors affect food security in one landscape system (AO2). This will be shown by including **simple** ideas about the physical factors that affect food security in one landscape system. 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.		Application of knowledge and understanding to examine how physical factors affect food security in any **one** landscape system could potentially include: ❖ Factors that could be applied to each specific landscape system depending on the particular examples cited: • Soil characteristics: texture, structure, mineral content • Temperature, minimum threshold for crop growth and length of growing season • Precipitation and water supply: amount, effectiveness, seasonal distribution • Altitude: affects relationship between climate, soil and growing season • Aspect and slope angle: affect microclimate and soil characteristics such as depth and drainage ❖ Additional factors specific to each landscape system, depending on examples cited: • Coastal landscapes o Change, gain or loss in area / quality of land available for farming may be affected by: - Submergence e.g. loss of lower valley deeper more fertile soils in ria formation - Emergence e.g. raised beaches - Marine / subaerial erosion e.g. coasts of weaker rocks such as East Anglia

					- Deposition e.g. Dungeness, Orford Ness o Proximity to the sea / warm ocean currents where temperatures milder in winter in mid-latitudes is of benefit to crop / livestock production e.g. British west coasts o Climate change; warming may lead to increased incidence / energy of storms, coastal flooding affecting food productivity, e.g. small island communities o Relief; low lying coasts, e.g. deltas, may be affected by salt water incursion as sea level rises • Glaciated landscapes o Glacial erosion in upland areas has removed soil, leaving barren areas of low agricultural productivity / extensive livestock rearing e.g. Snowdonia o Deposition by ice has created relatively fertile deep soils in till plains which are highly productive e.g. East Anglia o Deposition by glacio-fluvial processes has produced extensive outwash plains of only poor to moderate soil fertility o The combination of factors such as high altitude, low temperatures, high precipitation, steep slopes in uplands has led to low productivity affecting food security, whereas the converse may be true of lowland glaciated landscapes

					○ Length of growing season (thermal and hydrological) is influenced by latitude and altitude in glaciated landscapes ○ Post-glacial submergence of glacial troughs / fjords limits area of flat land / fertile soil available for farming • Dryland landscapes ○ Fragility of dryland environments; threats to food security may be caused by cascading effects of change in a single factor such as precipitation ○ Drought where populations depend on farming can initiate, intensify or contribute to: - Desertification - Soil erosion - Effects of blown sand on crops / dune encroachment in oases especially in semi-arid drylands ○ The combination of low mean annual rainfall and very high summer day time temperatures affect farming type and productivity / food security ○ Water supply – patterns of rainfall vary spatially and may change over time affecting crop yields positively or negatively ○ Food security is vulnerable in polar drylands; 'hunting and gathering' by indigenous people is a product of low

					temperatures, permafrost, lack of moisture, low precipitation, and low biodiversity.

Question			Answer	Mark	Guidance
10			**Examine how strategies to manage tectonic hazards shape place identity.** **Level 4 (10-12 marks)** Demonstrates **comprehensive** knowledge and understanding of strategies to manage tectonic hazards and place identity (AO1). Demonstrates **comprehensive** application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how strategies to manage tectonic hazards shape place identity (AO2). This will be shown by including **well-developed** ideas about strategies to manage tectonic hazards and place identity. 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 strategies to manage tectonic hazards and place identity (AO1). Demonstrates **thorough** application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how strategies to manage tectonic hazards shape place identity (AO2). This will be shown by including **well-developed** ideas about **either** strategies to manage tectonic hazards **or** place identity 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.	**12** **AO1 x6** **AO2 x6**	**Indicative content** **AO1 – 6 marks** Knowledge and understanding of strategies to manage tectonic hazards and place identity could potentially include: • strategies to manage tectonic hazards – mitigation against the event, vulnerability or losses • place identity – demographic, socio-economic, cultural, political, built and physical characteristics **AO2 – 6 marks** Application of knowledge and understanding to analyse how strategies to manage tectonic hazards shape place identity could potentially include: • mitigating against lava flows e.g. building lava diversion channels in Italy change the built environment potentially balancing the demographics of the population as emigration slows because confidence grows (so all age groups stay rather than just the elderly who cannot move) • mitigating against vulnerability improving community preparedness e.g. locally run radio warning system near Mount Merapi, Indonesia changes culture as the community understands the signs that can indicate a potential eruption rather than relying on local folklore about the movement of woodworms • mitigation against vulnerability changing building design e.g. in Kobe, Japan the railway station is covered in cross bracing which changes the built nature of Kobe's place identity • mitigation against the event e.g. land-use zoning may change both the built and natural environment of the place identity as land-use zones are changed by decision makers • distinction between long and short term mitigation. • Impact of aid agencies

			Level 2 (4-6 marks) Demonstrates **reasonable** knowledge and understanding of strategies to manage tectonic hazards and place identity (AO1). Demonstrates **reasonable** application of knowledge and understanding to provide sound analysis that shows some accuracy of how strategies to manage tectonic hazards shape place identity (AO2). This will be shown by including **developed** ideas about **either** strategies to manage tectonic hazards **or** place identity 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 strategies to manage tectonic hazards and place identity (AO1). Demonstrates **basic** application of knowledge and understanding to provide simple analysis that shows limited accuracy of how strategies to manage tectonic hazards shape place identity (AO2). This will be shown by including **simple** ideas about strategies to manage tectonic hazards and place identity. 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		• All mitigation creates a perception of safety to both the residents of an area as well as those looking in e.g. tourists

SECTION C

Question	Answer	Mark	Guidance
11*	**'Vulnerability to climate change depends on location rather than the level of economic development.' Discuss.** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of vulnerability to climate change and locational (spatial) factors and level of economic development. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of vulnerability to climate change and locational factors and level of economic development. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of vulnerability to climate change and locational factors and level of economic development. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of vulnerability to climate change and locational factors and level of economic development. **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 the vulnerability to climate change depends on location and level of economic development. 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 vulnerability to climate change depends on location rather than the level of economic development.	**33** **AO1 x9** **AO2 x24**	**Indicative content** **AO1 – 9 marks** Demonstrating knowledge and understanding of vulnerability to climate change and locational factors and level of economic development could potentially include: • What is climate change, including discussion of rates • Implications of climate change for people and the environment, such as changes to ecosystems, economies, health and extreme weather in different locations, and how these are projected to change in the future • The vulnerability of people and the environment to the impacts of climate change • Case studies of contrasting countries at different stages of economic development including current socio-economic and environmental impacts and the opportunities and threats they present, technological socio-economic and political challenges associated with effective mitigation and adaptation **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate the extent to which vulnerability to climate change depends on location rather than the level of economic development, could potentially include: • Level of economic development can determine mitigation and level of adaptation and therefore affect vulnerability for both people and environment • Vulnerability determined by effects, some of which are localised geographically e.g. only specific latitudes affected by vulnerability to tropical storms, or coastal flooding with rising sea level affects coastal zones • It could be argued that level of economic development is critical factor e.g. Southern

			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 the vulnerability to climate change depends on location and level of economic development. 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 vulnerability to climate change depends on location rather than the level of economic development. 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 the vulnerability to climate change depends on location and level of economic development. 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 vulnerability to climate change depends on location rather than the level of economic development. 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 the vulnerability to climate change depends on location and level of economic development. Demonstrates **basic** application of knowledge and		Bangladesh and South East USA are both affected by tropical storms, but Bangladesh is often more adversely affected e.g. in 1991 138,000 killed compared with 2005 in USA where 1400 died • However, vulnerability for some people is greater e.g. farmers in marginal environments – combination of geographical vulnerability and employment that is dependent on the changing environment • Population density could be argued to affect vulnerability as in higher density areas, greater proportions of the population is at risk increasing vulnerability • Global warming is most rapid at the poles, increasing vulnerability to polar environments and population e.g. Inuits in the Arctic • Impact of heat waves on humans • Low lying coastal areas and the impact of powerful storms • Impact to the global distribution of ecosystems • Coastal flooding

			understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which the vulnerability to climate change depends on location rather than the level of economic development. 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.		

Question			Answer	Mark	Guidance

12*			**'Evidence from the past contributes to accurate predictions of future climate change.'**
			Discuss.
			
			AO1
			Level 4 (7–9 marks)
			Demonstrates **comprehensive** knowledge and understanding of past evidence and predictions of future climate change.
			
			Level 3 (5–6 marks)
			Demonstrates **thorough** knowledge and understanding of past evidence and predictions of future climate change.
			
			Level 2 (3–4 marks)
			Demonstrates **reasonable** knowledge and understanding of past evidence and predictions of future climate change.
			
			Level 1 (1–2 marks)
			Demonstrates **basic** knowledge and understanding of the past evidence and predictions of future 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 evidence from the past contributes to accurate predictions of future 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 whether evidence from the past contributes to accurate predictions of future climate change.
			
			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 past evidence and predictions of future climate change could potentially include:
					• Past
					  ○ Methods used to reconstruct past climate
					  ○ Past climate to reveal periods of greenhouse and icehouse Earth
					  ○ How natural forcing has driven climate change in the geological past
					  ○ Humans have influenced the climate system, leading to a new epoch, the Anthropocene
					• Future
					  ○ An effective human response relies on knowing what the future will hold e.g. importance of the carbon cycle, influence of positive and negative feedback, future emission scenarios
					  ○ The global cooperation of nations is also vital to managing climate change
					
					AO2 – 24 marks
					Application of knowledge and understanding to analyse and evaluate whether evidence from the past contributes to accurate predictions of future climate change could potentially include:
					• Without understanding the past we cannot understand the present or begin to adjust the future.
					• Using a variety of methods helpful for ensuring a realistic picture e.g. sea-floor sediments, ice cores, lake sediments, tree rings and fossils
					• We need to understand natural forcing in order to interpret results appropriately e.g. external and internal forcing mechanisms
					• Using past data we need to use evidence of

			Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how evidence from the past contributes to accurate predictions of future 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 whether evidence from the past contributes to accurate predictions of future 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 evidence from the past contributes to accurate predictions of future 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 whether evidence from the past contributes to accurate predictions of future 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 evidence from the past contributes to accurate predictions of future climate change. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether evidence from the past contributes to accurate predictions of future climate change. Concepts are not discussed or are so inaccurately. **0 marks**		human influences especially since the industrial revolution to appreciate the speed of change and it's relative significance • Consideration of the reliability of past data • Using a range of methods enables a more accurate reading e.g. glacial retreat, sea level rise, global temperatures as well as atmospheric water vapour and anthropogenic greenhouse gas emissions • The rate of change globally is different now as: o technologies develop faster, o increased globalisation leading to quicker communications o much increased population growth This limits the effectiveness of past climate change data for predicting the future. • Society is seeing evidence of significant climate change in the recent past in contrast to evidence of slower changes over previous centuries/millennia. • It should be noted that atmospheric fluctuations are a natural phenomena.

			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.		

Question			Answer	Mark	Guidance
13*			**To what extent can <u>one</u> NGO effectively mitigate against disease at a national scale?** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of one NGO mitigating against disease at a national scale. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of a NGO mitigating against disease at a national scale. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of a NGO mitigating against disease at a national scale. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of a NGO mitigating against disease at a national scale. **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 effectiveness of one NGO mitigating against disease at a national scale. 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 one NGO can effectively mitigate against disease at a national scale. Relevant concepts are authoritatively discussed.	**33** **AO1 x9** **AO2 x24**	**Indicative content** **AO1 – 9 marks** Demonstrating knowledge and understanding of one NGO mitigating against disease at a national scale could potentially include: • Case study of the role that one NGO has played in dealing with a disease outbreak within one country at national level • E.g. British Red Cross mitigating cholera in Haiti or Cancer UK improving prevention, diagnosis and treatment across UK (other relevant examples are creditable) **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate the extent to which one NGO can effectively mitigate against disease at a national scale, could potentially include: • The effectiveness of the NGO in the case study studied – measured by ability to mitigate disease e.g. BRC in Haiti was ineffective in managing the scale of outbreak of cholera in Haiti. • Importance of co-operation of the NGO with various other bodies – without this, effect of NGO severely limited • Impact of grass roots strategies as more effective use of resources • Perhaps more effective at dealing with infectious diseases rather than non-communicable e.g. Cancer UK is having an impact, but role of education in prevention of cancer is changing culture, society and habits which is much more difficult to measure and achieve compared with supplying clean drinking water to an area to mitigate cholera • Effectiveness of alternative national strategies in comparison e.g.

			Level 3 (13–18 marks) Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the effectiveness of one NGO mitigating against disease at a national scale. 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 effectiveness of one NGO mitigating against disease at a national scale. 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 effectiveness of one NGO mitigating against disease at a national scale. 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 effectiveness of one NGO mitigating against disease at a national scale. 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 effectiveness of one NGO mitigating against disease at a national scale. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the effectiveness of one NGO mitigating against disease at a national scale. Concepts are not discussed or are so inaccurately.		○ Education e.g. UK government running campaigns and adverts to improve awareness of causes of obesity ○ Government action e.g. Indian government decreasing subsidies on petrol to increase cost of fuel, to reduce use of cars and decrease incidence of lung cancer ○ Multi agency strategies e.g. Ethiopian government working with UNICEF, World Bank, WHO to reduce incidence of malaria through spraying, destruction of breeding sites as well as mass publicity campaigns, early diagnosis and treatment and provision of treated bed nets ○ Role of pharmaceutical transnationals ○ Discussion of a range of NGOs working in an area/with a particular disease. ○ Consideration of the fact that any NGO will work with the government of an area, thus meaning they cannot solve a situation alone. ○ Various agencies work at different scales. WHO has a very different role to say UNICEF or the red cross.

			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.		

Question	Answer	Mark	Guidance
14*	**'Increasing mobility is the main influence on diffusion of disease at a variety of scales.'** **To what extent do you agree?** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of mobility and diffusion of disease at a variety of scales. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of mobility and diffusion of disease at a variety of scales. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of mobility and diffusion of disease at a variety of scales. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of mobility and diffusion of disease at a variety of scales. **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 mobility and other different factors that influence the diffusion of disease at a variety of scales. Demonstrates **comprehensive** application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether increasing mobility is the main influence on diffusion of disease at a variety of scales. Relevant concepts are authoritatively discussed.	**33** **AO1 x9** **AO2 x24**	**Indicative content** **AO1 – 9 marks** Demonstrating knowledge and understanding of mobility and diffusion of disease at a variety of scales could potentially include: • mobility – movement of people within and between countries • Disease diffusion – spread of disease outwards from its origin to new areas • Hagerstrand model • Types of diffusion – expansion, relocation, contagious and hierarchical • Consideration of scale – local /national /international • Other factors impacting diffusion such as; o International organisations e.g. WHO o Physical conditions and barriers o Level of development, socio-economic barriers **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate the influence of increasing mobility, and other different factors, on diffusion of disease, could potentially include: • A range of scales should be discussed from local, national to international • Physical barriers reduce the spread of disease and remote locations are becoming less isolated with increasing globalisation • Examples of the impact of increasing mobility include: o Ebola outbreak in West Africa 2014 spread locally between villages and regionally within and between nations o Recent influenza and other viruses, outbreaks spreading rapidly across continents following trade or migration

			Level 3 (13–18 marks) Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of mobility and other different factors that influence the diffusion of disease at a variety of scales. Demonstrates **thorough** application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to whether increasing mobility is the main influence on diffusion of disease at a variety of scales. 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 mobility and other different factors that influence the diffusion of disease at a variety of scales. Demonstrates **reasonable** application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether increasing mobility is the main influence on diffusion of disease at a variety of scales. 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 mobility and other different factors that influence the diffusion of disease at a variety of scales. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether increasing mobility is the main influence on diffusion of disease at a variety of scales.		patterns as well as international and national sporting or business events ○ The outbreak of Cholera in Haiti following the 2010 earthquake was brought in via global mobility [with UN worker from Nepal] Poor local living conditions caused rapid national spread of disease. South - lower mortality rates e.g. Sud, Sud-Est and Nippes, with greater access to safe drinking water and sanitation in IDP camps; higher mortality - remote areas where access to healthcare was limited. • Other factors that impact diffusion of disease, evaluated against increasing mobility, may include ○ Significance of physical conditions where diseases thrive e.g. flu in low temperatures, dengue fever in high temperatures and humidity, ○ Effectiveness of work of the WHO in researching, predicting and controlling disease diffusion, ○ level of economic development e.g. effectiveness of local education and healthcare programmes. ○ Government barriers e.g. national lockdown or closing borders. ○ Physical barriers ○ Mitigation already in place.

			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.		

Question			Answer	Mark	Guidance
15*			**Discuss the extent to which climate change has irreversibly damaged the oceans.** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of climate change and damage to the oceans. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of climate change and damage to the oceans. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of climate change and damage to the oceans. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of climate change and damage to the oceans. **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 climate change and damage to the oceans. 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 change has irreversibly damaged the oceans. 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 climate change and damage to the oceans could potentially include: • Impact of climate change o Acidification of oceans o Rising temperature and threat to coral ecosystems o Sea level change o Threats, impact and adaptations of island communities o Impact on sea ice o Impacts on Arctic region o Trends or inclusion of data. **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate the extent to which climate change has irreversibly damaged the oceans, could potentially include: • Acidity has increased by 30% since the industrial revolution limiting the ability of coral reefs, molluscs to accumulate calcium carbonate • Mussels cannot cling to rocks as acidification increases, severely affecting the ecosystem • Coral bleaching is prevalent across the tropics and has been increasing since 1980s. Events have grown in intensity, frequency and scale. Some of this coral is unable to recover, proving the ocean has passed the threshold for sensitive communities • Arctic sea ice has decreased 2.9% since 1978, reducing from 15 million km2 to 4 million km2. Depth of Arctic sea ice has also decreased from 4m to 1.25m on average. • Concept of threshold (critical tipping point in ocean causing massive and irreversible

			Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of climate change and damage to the oceans 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 change has irreversibly damaged the oceans. 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 climate change and damage to the oceans. 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 change has irreversibly damaged the oceans. 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 climate change and damage to the oceans. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which climate change has irreversibly damaged the oceans. Concepts are not discussed or are so inaccurately. **0 marks** No response or no response worthy of credit.		damage) may be used in evaluation

			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		

Question			Answer	Mark	Guidance

16*			**'Plastic is the most serious threat to marine ecosystems.' Discuss.**
			
			AO1
			Level 4 (7–9 marks)
			Demonstrates **comprehensive** knowledge and understanding of threats to marine ecosystems.
			
			Level 3 (5–6 marks)
			Demonstrates **thorough** knowledge and understanding of threats to marine ecosystems.
			
			Level 2 (3–4 marks)
			Demonstrates **reasonable** knowledge and understanding of threats to marine ecosystems.
			
			Level 1 (1–2 marks)
			Demonstrates **basic** knowledge and understanding of threats to marine ecosystems.
			
			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 threats to marine ecosystems.
			
			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 plastic is the most serious threat to marine ecosystems.
			
			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 threats to marine ecosystems could potentially include:
					
					• Plastic
					  ○ Major sources of plastic pollutants
					  ○ How plastic can spread around the globe via oceanic circulation
					  ○ Causes of the accumulation of plastic in one ocean gyre
					  ○ Plastic is moved around the world from source via waves. This movement is controlled by winds and Coriolis effect, contributing to the creation of gyres e.g. Western and Eastern Pacific Garbage Patch
					• Other threats
					  ○ Oils spills – impacts and management on the marine ecosystem
					  ○ Climate change – impact of acidification on fish, rising temperatures on coral ecosystems
					  ○ Any other relevant sources of pollution
					
					AO2 – 24 marks
					Application of knowledge and understanding to analyse and evaluate the extent to which plastic is the most serious threat to marine ecosystems, could potentially include:
					• Plastic has been mass produced since 1907, it has risen in production exponentially since e.g. 1950 1.5 million tons of plastic produced, in 2016 more than 320 million tons. This is expected to double by 2034, littering the ocean further. Production is likely to continue to increase because plastic is light, durable and cheap to produce
					• Plastic expected to outweigh fish by 2050. Much is micro-plastic which is impossible to remove
					• Plastic ends up in the ocean from rivers,

			understanding to provide a clear and developed analysis that shows accuracy of the threats to marine ecosystems. 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 plastic is the most serious threat to marine ecosystems 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 threats to marine ecosystems. 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 plastic is the most serious threat to marine ecosystems. 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 threats to marine ecosystems. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which plastic is the most serious threat to marine ecosystems. Concepts are not discussed or are so inaccurately. **0 marks** No response or no response worthy of credit. **Quality of extended response**		beaches, industrial shipping accidents • It is estimated that every day 8 million pieces of plastic end up in the ocean, making up 80% of marine debris – waste policies in many countries are not effective enough to reduce plastic waste. Other issues taking precedence • Variety of plastic waste increasing year by year, it's going to get worse and incidence of plastic increase • Nurdles light, easily transported and small so easily spilled and dispersed around the ocean. Found in every ocean and along most coastlines globally affecting a much larger area than oil spills • Entire marine ecosystem affected by Deepwater Horizon disaster in 2010. High mortality rates among birds, fish and turtles in numbers not reported on in relation to plastic • Gulf of Mexico home to 5 endangered species of turtle, all of which were affected. Due to the contained area of the oil spill and the importance of the Gulf of Mexico as a nursery ground, and the vulnerability of these species indicate that this is a greater threat than plastic • Ocean acidification is affecting every trophic level in the marine ecosystem from sea butterflies to whales and mackerel making it a more serious threat as so many species are affected • Coral bleaching caused by rising sea temperatures is very serious for coral reefs, but these only make up 25% of marine species, although arguably they have the highest biodiversity of all marine ecosystems, but they cover a very small portion of the ocean floor (less than 1%), making this a very localised problem and therefore a relatively small threat • Loss of biodiversity globally • Coastal flooding and the impact on Island communities and low lying areas such as the Maldives • Economic issues arising from the impact of plastic such as on the fishing industry

			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.		

Question			Answer	Mark	Guidance
17*			**'Advanced Countries will always experience food security.'** **To what extent do you agree with this statement?** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of ACs and food security. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of ACs and food security. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of ACs and food security. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of ACs and 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 Advanced Countries and food security. 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 Advanced Countries will always experience food security. Relevant concepts are authoritatively discussed.	**33** **AO1 x9** **AO2 x24**	**Indicative content** **AO1 – 9 marks** Demonstrating knowledge and understanding of Advanced Countries and food security could potentially include: • Issues surrounding food security – availability, access, utilization, stability and security • Advanced countries – development characteristics e.g. well-developed financial markets, effective supply and demand of capital, goods, services and information, diversified economic structures enabling economic resilience **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate the extent to which Advanced Countries will always experience food security, could potentially include: • ACs suffer from less than 5% of global prevalence of undernourishment, however this doesn't mean that food is secure • Recent geographical pinch points were within ACs e.g. issues of distribution during the UK fuel crisis in 2012, or during the volcanic eruption in Iceland in 2010 • ACs with semiarid land can easily suffer from increased desertification e.g. USA, Spain or Australia • Climate change increasing extreme weather events e.g. heatwaves in Europe 2003 or flooding (58% of UK most productive farmland is within floodplains and increasingly at risk from increasingly unpredictable precipitation patterns) • Water scarcity in Australia caused by periodic drought linked to El Niño events

			Level 3 (13–18 marks) Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of Advanced Countries and 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 Advanced Countries will always experience 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 Advanced Countries and 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 Advanced Countries will always experience food security. 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 Advanced Countries and 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 Advanced Countries will always experience food security. Concepts are not discussed or are so inaccurately. **0 marks**		• Tectonic hazards significantly affect agriculture in ACs e.g. Mount Etna 2002 eruption in Italy caused 50% of orange crop to be destroyed and 80% of vegetable crops lost • Candidates may analyse and evaluate by comparing ACs to EDCs or LIDCs, this can be credited, but the focus must be on ability of the AC to consistently benefit from food security. An answer that is dependent upon the contrasting food insecurity of EDCs / LIDCs is unlikely to satisfy Level 4 AO2.

			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.		

Question			Answer	Mark	Guidance
18*			**'Food production and food security issues have a greater impact on the physical environment than they do on people.'** **Discuss.** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of food production and security issues. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of food production and security issues. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of food production and security issues. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of food production and security issues. **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 impact of food production and security issues on the physical environment and on people. 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 production and security issues have a greater impact on the physical environment than they do on people.	**33** **AO1 x9** **AO2 x24**	**Indicative content** **AO1 – 9 marks** Demonstrating knowledge and understanding of food production and food security issues could potentially include: • Food production issues e.g. irrigation, deforestation, changing landscapes, use of agrochemicals • Food security issues e.g. food shortages, food surpluses and poor diet **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate the extent to which food production and security issues have a greater impact on the physical environment than they do on people, could potentially include: • Analysis of issues of food production and security e.g. deforestation – an area equal to Costa Rica is deforested globally every year predominately for food production reducing biodiversity and carbon store • Security issues are more influential because both issues of shortage and surplus can lead to death, an effect we cannot change • Social issues associated with surplus causing globesity is an international phenomenon and likely to continue to spread into more LIDCs as wealth of citizens increases. There are more global initiatives to mitigate against issues associated with food shortages e.g. MDGs, but far fewer international efforts to control, stem the rise of globesity • Many of the environmental impacts are short term as effective management or

			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 impact of food production and security issues on the physical environment and on people. 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 production and security issues have a greater impact on the physical environment than they do on people. 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 impact of food production and security issues on the physical environment and on people. 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 production and security issues have a greater impact on the physical environment than they do on people. 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 impact of food production and security issues on the physical environment and on people. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers		agricultural practice adaptations can lead to a relatively quick recovery of the soil, land or ecosystem e.g. managing herd sizes reduces compaction, weed infestations and salinisation • Expect wide variety of case studies to evidence arguments

			simple conclusions as to the extent to which food production and security issues have a greater impact on the physical environment than they do on people. 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.		

Question			Answer	Mark	Guidance
19*			**'The impacts of tectonic hazards are mainly economic rather than political or environmental.' Discuss.** **AO1** **Level 4 (7–9 marks)** Demonstrates **comprehensive** knowledge and understanding of the impacts caused by tectonic hazards. **Level 3 (5–6 marks)** Demonstrates **thorough** knowledge and understanding of the impacts caused by tectonic hazards. **Level 2 (3–4 marks)** Demonstrates **reasonable** knowledge and understanding of the impacts caused by tectonic hazards. **Level 1 (1–2 marks)** Demonstrates **basic** knowledge and understanding of the impacts caused by tectonic hazards. **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 whether impacts of tectonic hazards are mainly economic rather than political or environmental. 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 impacts of tectonic hazards are mainly economic rather than political or environmental. Relevant concepts are authoritatively discussed.	**33** **AO1 x9** **AO2 x24**	**Indicative content** **AO1 – 9 marks** Demonstrating knowledge and understanding of the impacts caused by tectonic hazards could potentially include: • Political: o Government declaring state of emergency o Ordering military to assist with recovery o Accepting or requesting international aid o Investment in recovery and mitigation o Undermine stability of governments, regional and national • Economic o Cost including reconstruction o Disruption to power supplies o Damage to infrastructure o Widespread debris requiring mechanical removal o Disruption to economic activities e.g. agriculture, manufacturing and services e.g. loss of production o Fall in stock market o Fall in value of currency o Increased insurance costs post-event • Environmental o New relief e.g. new land created from lava flows, relief changed as steep sided valleys infilled, or crevices created from seismic shift, change in slope due to lahar or mass movement, land moves with seismic activity o Change in weather patterns due to ash in the atmosphere o Increase in acid rain from emission of Sulphur dioxide o Earth shifts of axis due to large seismic movement e.g. Tōhoku 2011 o Tsunamis triggered – coastal and inland

			Level 3 (13–18 marks) Demonstrates **thorough** application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of whether impacts of tectonic hazards are mainly economic rather than political or environmental. 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 impacts of tectonic hazards are mainly economic rather than political or environmental. 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 whether impacts of tectonic hazards are mainly economic rather than political or environmental. 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 impacts of tectonic hazards are mainly economic rather than political or environmental. 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 whether impacts of tectonic hazards are mainly economic rather than political or environmental. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which impacts of tectonic hazards are mainly economic rather than political or environmental.		flooding; shoreline erosion; sediment flows ○ Change in altitude of shoreline e.g. northern Honshu ↓ 0.6m **AO2 – 24 marks** Application of knowledge and understanding to analyse and evaluate whether impacts of tectonic hazards are mainly economic rather than political or environmental could potentially include: • Economic impacts are easily measured by looking at cost of repair or recovery e.g. Japanese earthquake cost $235 billion, Kobe earthquake cost $100 billion, Northridge USA cost $42 billion. Significance of cost indicates extent of impact. • Some economic impacts are also political or environmental e.g. ash fall from Mount Merapi destroyed the rice harvest • Environmental impacts could outlast other impacts because land has been created or shifted which is more than we can do e.g. island of Honshu moved 2.4m east during the Great East Japan earthquake 2011 – this is something that only another earthquake can affect and would potentially out last any economic impact • Political impacts could be linked to development e.g. Haiti is still recovering from the earthquake in 2010 and this is still affecting rates of tourism which have significant economic implications. In comparison, Japan has widely recovered however Fukashima is an exclusion zone until 2023. • Expect wide range of justification and case studies. • Candidates may evaluate by ability to recover, duration of impact, size of population affected by impact, scale of impact etc • Responses do not have to include both seismic

			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.		and volcanic examples.

Question			Answer	Mark	Guidance

20*			**All types of plate boundaries generate tectonic hazards for people.**
			To what extent are those at convergent boundaries the most damaging?
			
			AO1
			Level 4 (7–9 marks)
			Demonstrates **comprehensive** knowledge and understanding of tectonic hazards created at plate boundaries.
			
			Level 3 (5–6 marks)
			Demonstrates **thorough** knowledge and understanding of the tectonic hazards created at plate boundaries.
			
			Level 2 (3–4 marks)
			Demonstrates **reasonable** knowledge and understanding of the tectonic hazards created at plate boundaries.
			
			Level 1 (1–2 marks)
			Demonstrates **basic** knowledge and understanding of the tectonic hazards created at plate boundaries.
			
			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 whether tectonic hazards created at convergent plate boundaries are the most damaging to people compared with hazards created at other plate boundaries.
			
			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 tectonic hazards created at convergent plate
				33
				AO1 x9
				AO2 x24
					Indicative content
					AO1 – 9 marks
					Demonstrating knowledge and understanding of tectonic hazards generated at plate boundaries could potentially include:
					• Divergent plate boundaries
					  ○ Seismic activity along transform faults
					  ○ Uprising of magma creating shield volcanoes
					• Conservative plate boundaries
					  ○ Friction causing seismic activity
					• Convergent plate boundaries;
					  ○ Faulting and fracturing in the Benioff zone causing seismic activity
					  ○ Subduction causing basaltic magma to melt and rise to form strato-volcanoes releasing explosive eruptions
					
					AO2 – 24 marks
					Application of knowledge and understanding to analyse and evaluate the extent to which tectonic hazards generated at convergent plate boundaries are the most damaging to people compared with tectonic hazards created at other plate boundaries could potentially include:
					• Use of exemplar seismic or volcanic activity and the associated impact on people. E.g. VEI 4 eruption of Merapi, Indonesia in 2010 at the convergent boundary between Indo-Australian and Eurasian plate. Pyroclastic flows reached 15km at their furthest extent (southerly), lava bombs thrown 4km from summit, lahars caused widespread disruption. 367 killed, 277 injured and 410,000 made homeless. Communications disrupted as ash and pyroclastic flows destroyed infrastructure.
					• Ridges of diverging boundaries on average

			boundaries are the most damaging to people compared with hazards created at other plate boundaries. 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 whether tectonic hazards created at convergent plate boundaries are the most damaging to people t compared with hazards created at other plate boundaries. 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 tectonic hazards created at convergent plate boundaries are the most damaging to people compared with hazards created at other plate boundaries. 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 whether tectonic hazards created at convergent plate boundaries are the most damaging to people compared with hazards created at other plate boundaries. 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 tectonic hazards created at convergent plate boundaries are the most damaging to people compared with hazards created at other plate boundaries. Concepts are discussed but their use lacks precision. **Level 1 (1–6 marks)**		2.5m below ocean surface so hazards limited • Comparison with diverging boundaries causing effusive eruptions occur here, leading to shield volcanoes which are often erupting under the ocean, and have little effect on people. • Earthquakes tend to be shallow with less strength caused as magma rises through the chamber and the vent. • However, Eyafjallajökull, Iceland 2010 (VEI 4), which disrupted European airports shut for several days in April 2010 costing airlines £130 million a day, tourists stranded, many goods spoiled as fruit and flowers were left to rot in exporting nations in Africa and the Caribbean. • Comparison with hazards created at conservative boundaries e.g. San Andreas Fault. People here experience earthquakes on a regular basis, in July 2019 earthquakes were occurring once a minute, with one at 7.1, and one at 6.4 on the Richter scale. No major impacts reported. • Measures of 'more damaging' must be linked to people e.g. accept environmental impacts that are discussed in terms of use by people e.g. recreation / tourism

			Demonstrates **basic** application of knowledge and understanding to provide a simple analysis that shows limited accuracy of whether tectonic hazards created at convergent plate boundaries are the most damaging to people compared with hazards created at other plate boundaries. Demonstrates **basic** application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which tectonic hazards created at convergent plate boundaries are the most damaging to people compared with hazards created at other plate boundaries. 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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