

A Level Geography H481/03 Geographical debates Sample Question Paper

Date – Morning/Afternoon

Time allowed: 2 hours 30 minutes



You must have:

- the Resource Booklet
- the OCR 12-page Answer Booklet
(OCR 12 sent with general stationery)

You may use:

- a ruler (cm/mm)
- a piece of string
- a scientific or graphical calculator



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INSTRUCTIONS

- Use black ink. You may use an HB pencil for graphs and diagrams
- Section A: Choose **two topics** and answer **both parts** of the question from **each** topic.
- Section B – Synoptic questions: Choose **two topics** and answer **the** question from **each** selected topic. You must use your knowledge and understanding from across the course of study to answer these questions.
- Section C: Choose **two topics** and answer **one** question from **each** topic.
- Write your answer to each question in the Answer Booklet.
- Additional paper may be used if required but you must clearly show your candidate number, centre number and question number(s).
- Do **not** write in the bar codes.
- The separate Resource Booklet will be found inside this document.

INFORMATION

- The total mark for this paper is **108**.
- The marks for each question are shown in brackets [].
- Quality of extended response will be assessed in questions marked with an (*).
- This document consists of **8** pages.

Section A

Choose **two topics** and answer **both parts** of the question from **each** topic.

Topic 3.1 – Climate Change

- 1
- (a) Identify three limitations with the data evidence in **Fig. 1**. [3]
 - (b) Explain how shrinking ice sheets show the world has warmed since the late-nineteenth century. [6]

Topic 3.2 – Disease Dilemmas

- 2
- (a) Identify three limitations with the data evidence in **Fig. 2**. [3]
 - (b) Explain how global patterns of temperature and precipitation affect patterns of disease. [6]

Topic 3.3 – Exploring Oceans

- 3
- (a) Identify three limitations with the data evidence in **Fig. 3**. [3]
 - (b) Explain the global distribution of warm and cold ocean surface currents. [6]

Topic 3.4 – Future of Food

- 4
- (a) Identify three limitations with the data evidence in **Fig. 4**. [3]
 - (b) Explain the physical conditions necessary for growing food. [6]

Topic 3.5 – Hazardous Earth

- 5
- (a) Identify three limitations with the data evidence in **Fig. 5**. [3]
 - (b) Explain the features and processes at divergent plate boundaries. [6]

Section B – Synoptic questions

Choose **two topics** and answer **the** question from **each** topic. You must use your knowledge and understanding from across the course of study to answer these questions.

Topic 3.1 – Climate Change

- 6 Examine how climate change may be impacting the carbon cycle in the Arctic tundra. [12]

Topic 3.2 – Disease Dilemmas

- 7 'It is more challenging to mitigate against communicable diseases in areas with human rights or territorial integrity conflicts.'

For **either** human rights conflicts **or** territorial integrity conflicts, how far do you agree with the statement?

[12]

Topic 3.3 – Exploring Oceans

- 8 Assess how the use of oceans is affected by **either** the global system of trade **or** the global system of migration. [12]

Topic 3.4 – Future of Food

- 9 Assess how globalisation of the food industry affects stores in water systems. [12]

Topic 3.5 – Hazardous Earth

- 10 Examine how the risks from tectonic hazards affect place making processes. [12]

Section C

Choose **two topics** and answer **one** question from **each** topic.

Topic 3.1 – Climate Change

11* 'The vulnerability of people to the impacts of climate change is mainly the result of economic factors.' Discuss.

[33]

OR

12* 'Physical factors influence climate change more than human factors.' Discuss.

[33]

Topic 3.2 – Disease Dilemmas

13* Assess the relative importance of social factors influencing the spread of disease.

[33]

OR

14* 'Increased global mobility is the most important influence on the spread of communicable diseases.' How far do you agree with this statement?

[33]

Topic 3.3 – Exploring Oceans

15* To what extent can ocean energy and sea-bed mineral resources be managed sustainably?

[33]

OR

16* How far do you agree that effects of climate change on oceans bring more opportunities than threats?

[33]

Topic 3.4 – Future of Food

17* 'Threats to food security are greatest in dryland areas.' Discuss.

[33]

OR

18* 'Imbalances in global food production have a greater impact on people than the environment.' Discuss.

[33]

Topic 3.5 – Hazardous Earth

19* Assess the importance of governments in reducing the risks of tectonic hazards over time.

[33]

OR

20* 'Earthquakes generate only local hazards.' Discuss.

[33]

END OF QUESTION PAPER

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...day June 20XX – Morning/Afternoon

A Level Geography

H481/03 Geographical debates

SAMPLE MARK SCHEME

Duration: 2 hour 30 minutes

MAXIMUM MARK 108

This document consists of 72 pages

MARKING INSTRUCTIONS**PREPARATION FOR MARKING****SCORIS**

1. Make sure that you have accessed and completed the relevant training packages for on-screen marking: *scoris assessor Online Training*; *OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are posted on the RM Cambridge Assessment Support Portal <http://www.rm.com/support/ca>
3. Log-in to scoris and mark the **required number** of practice responses (“scripts”) and the **required number** of standardisation responses.

YOU MUST MARK 10 PRACTICE AND 10 STANDARDISATION RESPONSES BEFORE YOU CAN BE APPROVED TO MARK LIVE SCRIPTS.

TRADITIONAL

Before the Standardisation meeting you must mark at least 10 scripts from several centres. For this preliminary marking you should use **pencil** and follow the **mark scheme**. Bring these **marked scripts** to the meeting.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the scoris 50% and 100% (traditional 50% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, email or via the scoris messaging system.

5. Work crossed out:
 - a. where a candidate crosses out an answer and provides an alternative response, the crossed out response is not marked and gains no marks
 - b. if a candidate crosses out an answer to a whole question and makes no second attempt, and if the inclusion of the answer does not cause a rubric infringement, the assessor should attempt to mark the crossed out answer and award marks appropriately.
6. Always check the pages (and additional objects if present) at the end of the response in case any answers have been continued there. If the candidate has continued an answer there then add a tick to confirm that the work has been seen.
7. There is a NR (No Response) option. Award NR (No Response)
 - if there is nothing written at all in the answer space
 - OR if there is a comment which does not in any way relate to the question (e.g. 'can't do', 'don't know')
 - OR if there is a mark (e.g. a dash, a question mark) which isn't an attempt at the question.Note: Award 0 marks – for an attempt that earns no credit (including copying out the question).
8. The scoris **comments box** is used by your Team Leader to explain the marking of the practice responses. Please refer to these comments when checking your practice responses. **Do not use the comments box for any other reason.**
If you have any questions or comments for your Team Leader, use telephone, email or the scoris messaging system.
9. Assistant Examiners will send a brief report on the performance of candidates to their Team Leader (Supervisor) via email by the end of the marking period. The report should contain notes on particular strengths displayed as well as common errors or weaknesses. Constructive criticism of the question paper/mark scheme is also appreciated.

10. Annotations

Annotation	Meaning

11. 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.

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

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

In your marking, you will encounter valid responses which are not covered by the Mark Scheme: these responses must be credited. You will encounter answers which fall outside the 'target range' of Bands for the paper which you are marking. Please mark these answers according to the marking criteria.

Please read carefully all the scripts in your allocation and make every effort to look positively for achievement throughout the ability range. Always be prepared to use the full range of marks.

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.	<p>Knowledge and understanding shown is consistently applied to the context of the question, in order to form a:</p> <p>clear, developed and convincing analysis that is fully accurate.</p> <p>clear, developed and convincing interpretation that is fully accurate.</p> <p>detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based.</p>	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.	<p>Knowledge and understanding shown is mainly applied to the context of the question, in order to form a :</p> <p>clear and developed analysis that shows accuracy.</p> <p>clear and developed interpretation that shows accuracy.</p> <p>detailed evaluation that offers generally secure judgements, with some link between rational conclusions and evidence.</p>	Quantitative, qualitative and/or fieldwork skills are used in a suitable way and with a good level of competence and precision.	There is a line of reasoning presented with some structure. The information presented is in the most-part relevant and supported by some evidence.

Reasonable	Some sound knowledge that demonstrates partially developed understanding that is relevant to the demands of 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 judgements and conclusions, with limited use of evidence.	Quantitative, qualitative and/or fieldwork skills are used in a mostly suitable way with a sound level of competence but may lack precision.	The information has some relevance and is presented with limited structure. The information is supported by limited evidence.
Basic	Limited knowledge that is relevant to the topic or question with little or no development. 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	Marks	Guidance
1	(a)	<p>Identify three limitations with the data evidence in Fig. 1.</p> <p>The horizontal line showing an approximate 30 year mean (from 1961-1990) gives no indication for why this time period was chosen and the data doesn't show any striking changes for this period (✓).</p> <p>The 10 year running mean shows a general pattern of increasing global surface temperatures however this doesn't show yearly / annual variations which may give a more accurate picture for analysis (✓).</p> <p>The vertical arrow on the graph identified as 'warmer than average' is only compared to the 30 year mean surface temperature not to the whole period of data shown on the graph from 1880 (✓).</p>	<p>3 AO3 x3</p>	<p>AO3 – 3 marks 3x1 (✓) for limitations of the data evidence identified through critical questioning of the resource.</p>
	(b)	<p>Explain how shrinking ice sheets show the world has warmed since the late-nineteenth century.</p> <p>Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of evidence which indicates the world has warmed since the late-nineteenth century (AO1).</p> <p>This will be shown by including well-developed ideas about evidence which indicates the world has warmed since the late-nineteenth century.</p> <p>Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of evidence which indicates the world has warmed since the late-nineteenth century (AO1).</p>	<p>6 AO1 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of how shrinking ice sheets show the world has warmed could potentially include:</p> <ul style="list-style-type: none"> • Green land (1.7 million km²) Antarctica (14 million km²) have major ice sheets which are experiencing losses due to: ablation, surface melt, calving at ocean interface, melting from ocean contact (significant warming since 1940s, mainly in top 300m) • Polar ice loss has led to 11.1mm of global sea level rise since 1992 • Rising sea levels - present day melting of polar ice sheets adds approximately 1mm every year • European space agency monitoring (Cryo-sat 2), enhanced ice sheet monitoring from Nov 2010 to Sept 2013 and found the largest annual losses in Western

Question	Answer	Marks	Guidance
	<p>This will be shown by including developed ideas about evidence which indicates the world has warmed since the late-nineteenth century.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of evidence which indicates the world has warmed since the late-nineteenth century (AO1).</p> <p>There may be simple ideas about evidence which indicates the world has warmed since the late-nineteenth century.</p> <p>0 marks No response or no response worthy of credit.</p>		<p>Antarctica and the Admunsen Sea shows the largest signal of ice loss</p> <ul style="list-style-type: none"> • Ice sheet loss not just about the world warming but the impact of this warming on oceans which are increasing in temperatures and ocean circulation is altering • Measuring ice sheet loss is much more recent than monitoring of global temperatures. Since late 19th century global surface temperature changes have been approx. 0.6 degrees.

Question		Answer	Marks	Guidance
2	(a)	<p>Identify three limitations with the data evidence in Fig. 2.</p> <p>The continent and world region groupings on the horizontal axis (x-axis) of the graph; are for large areas and shows little variation in mortality percentages to identify any real global differences (✓).</p> <p>Percentage of mortality includes anyone under the age of 60 years, not allowing for age cohort or gender breakdown which would give a clearer picture of who was most affected by diabetes (✓).</p> <p>Mortality rates are usually expressed as deaths per 1,000 people per year. However, the graph shows percentage mortality, so data has been converted. Raw data instead of percentages could indicate clearer / large differences in mortality resulting from diabetes (✓).</p>	<p>3 AO3 x3</p>	<p>AO3 – 3 marks 3x1 (✓) for limitations of the data evidence identified through critical questioning of the resource.</p>
	(b)	<p>Explain how global patterns of temperature and precipitation affect patterns of disease.</p> <p>Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of how global patterns of temperature and precipitation affect patterns of disease (AO1).</p> <p>This will be shown by including well-developed ideas about how global patterns of temperature and precipitation affect patterns of disease.</p> <p>Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of how global patterns of temperature</p>	<p>6 AO1 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of how global patterns of temperature and precipitation affect patterns of disease, could potentially include:</p> <ul style="list-style-type: none"> • high temperatures (32 degrees and above) and rainfall in tropical and sub-tropical regions encourages vector borne diseases to thrive such as malaria and dengue fever • In the northern hemisphere with lower temperatures particularly in the winter months and with high precipitation levels this encourages, influenza epidemics and the flu virus • prolonged periods of dry weather and drought conditions (USA, Australia, Africa) contribute to forest /

Question	Answer	Marks	Guidance
	<p>and precipitation affect patterns of disease (AO1).</p> <p>This will be shown by including developed ideas about how global patterns of temperature and precipitation affect patterns of disease.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of how global patterns of temperature and precipitation affect patterns of disease (AO1).</p> <p>There may be simple ideas about how global patterns of temperature and precipitation affect patterns of disease.</p> <p>0 marks No response or no response worthy of credit.</p>		<p>bush fires creating respiratory illness</p> <ul style="list-style-type: none"> • in tropical areas located close to the equator, influenza outbreaks occur all year where temperature and rainfall is high all year with little fluctuation • in monsoonal areas with peaks of high rainfall and higher temperatures from May to August diarrhoeal disease in South Asia surges • El Niño from late 2014 to early 2015 created regional weather patterns including persistent high temperatures and drought in some areas and heavy rainfall and flooding in others. There were regional infectious disease hotspots due to droughts, floods and tropical cyclones. The temperature and rainfall patterns encourage the transmission of disease such as cholera in Bangladesh or dengue fever in Thailand.

Question		Answer	Marks	Guidance
3	(a)	<p>Identify three limitations with the data evidence in Fig. 3.</p> <p>The key used on the map gives three general categories of impact with no explanation of what the human impacts on marine ecosystems include (✓).</p> <p>The impacts have no numerical value or any indication of what data is included to judge the high, medium and low level impacts (✓).</p> <p>The yellow and green categories (medium and low impacts) cover vast ocean areas. The pattern shown is quite specific, particularly for the green categories with no information on how this was mapped (✓).</p>	<p>3 AO3 x3</p>	<p>AO3 – 3 marks 3x1 (✓) for limitations of the data evidence identified through critical questioning of the resource.</p>
	(b)	<p>Explain the global distribution of warm and cold ocean surface currents.</p> <p>Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of the global distribution of warm and cold ocean surface currents (AO1).</p> <p>This will be shown by including well-developed ideas about the global distribution of warm and cold ocean surface currents.</p> <p>Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of the global distribution of warm and cold ocean surface currents (AO1).</p> <p>This will be shown by including developed ideas about the global distribution of warm and cold ocean surface currents.</p>	<p>6 AO1 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of the global distribution of warm and cold ocean surface currents could potentially include:</p> <ul style="list-style-type: none"> • large quantities of heat can be absorbed and stored in the surface layers of the ocean; the heat is transported by ocean currents • most oceans have warm water at the surface (particularly true at the equator) and decrease in temperature with depth • as ocean currents move away from the equator they continue to absorb as much heat, whilst they remain within the Tropics • moving away from the Tropics the currents start to radiate heat such as the North Atlantic current • surface ocean currents are driven by global winds, north of the equator the flow is usually clockwise, south of the equator counter-clockwise. Exceptions to these

		<p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the global distribution of warm and cold ocean surface currents (AO1).</p> <p>There may be simple ideas about the global distribution of warm and cold ocean surface currents.</p> <p>0 marks No response or no response worthy of credit.</p>		<p>occur as a result of deflections caused by the angle at which a current strikes a land mass or continental shelf or by the direction of prevailing sea level winds at particular latitudes.</p> <ul style="list-style-type: none"> • in polar regions ocean surface currents become cooler in temperature and increase in salinity. With increased salinity there is an increase in density so the cooler water sinks in to the ocean depths and disperses horizontally • deep currents flow back to equatorial regions where water rises in the thermohaline circulation (ocean conveyor belt system) • effect of El Niño – Southern Oscillation, where warm water is transported westwards in The Pacific towards South America.
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Question		Answer	Marks	Guidance
4	(a)	<p>Identify three limitations with the data evidence in Fig. 4.</p> <p>There is a considerable difference in the BMI of adults who are overweight compared to those who are obese, if mapped separately then the patterns may be quite different (✓).</p> <p>The categories on the key are not evenly distributed, for example between 72-90% there is a difference of 18% whereas 57-71% the difference is 14% (✓).</p> <p>There is no time period defined on this map either for when the data was gathered or displayed on the actual map (✓).</p>	<p>3 AO3 x3</p>	<p>AO3 – 3 marks 3x1 (✓) for limitations of the data evidence identified through critical questioning of the resource.</p>
	(b)	<p>Explain the physical conditions necessary for growing food.</p> <p>Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of the physical conditions necessary for growing food (AO1).</p> <p>This will be shown by including well-developed ideas about the physical conditions necessary for growing food.</p> <p>Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of the physical conditions necessary for growing food (AO1).</p> <p>This will be shown by including developed ideas about the physical conditions necessary for growing</p>	<p>6 AO1 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of the physical conditions necessary for growing food could potentially include:</p> <ul style="list-style-type: none"> • air – plants need carbon dioxide for growth. Part of the process of photosynthesis for plants to generate food • climate (temperature and rainfall) – temperate crops (cereals) grow between 15 and 20 degrees where-as tropical crops (rice) grow between 16 and 27 degrees. Outside of these temperatures (particularly frost conditions) could result in lower crop yields. Rainfall patterns in places such as Southern Africa and Southern Asia cause bursts of crop growth and planting is linked to seasonal variations whereas rainforest areas such as the Amazon crop growth is optimised in the drier season (June – Sept) as there is sufficient groundwater flow • soils have mineral and organic matter to support plant growth. They provide critical nutrients for plant growth,

Question	Answer	Marks	Guidance
	<p>food.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the physical conditions necessary for growing food (AO1).</p> <p>There may be simple ideas about the physical conditions necessary for growing food.</p> <p>0 marks No response or no response worthy of credit.</p>		<p>water and a structure for root systems to develop. Examples of essential nutrients for plant growth are: carbon, nitrogen, phosphorus, calcium and potassium; these are absorbed through plant root systems</p> <ul style="list-style-type: none"> • water has dissolved nutrients which plants can absorb through root systems (root hairs). Plants require variations in water access depending on the stages of their development. Frequency and depth of irrigation affects yields. For example Maize yields are affected if there is a water deficit during the flowering period • water uptake by plants needs to be offset against transpiration levels to ensure that growing conditions are optimised. Plant root depth will impact on absorption rates for water. Alternatively waterlogged soils do not allow seeds to germinate • the permeability and porosity of soils can help or hinder water movement. If water is easily lost through soils then nutrients are leached affecting plant growth • other factors could be explained such as: elevation (impact on temperature, soil depth and acidity), light (day light hours), salinity (especially with high rates of evaporation), wind and humidity.

Question		Answer	Marks	Guidance
5	(a)	<p>Identify three limitations with the data evidence in Fig. 5.</p> <p>Map projection doesn't show the whole world map so earthquakes may have happened which were then not mapped (✓).</p> <p>The clustering of earthquake activity in particular areas of the map such as north and east of Australia make it difficult to identify the range of earthquake magnitudes (✓).</p> <p>The magnitude categories on the key; become narrower as the magnitude decreases. The difference between 6.6 and 8.2 is 1.6, at the bottom of the scale the difference between 5 and 5.29 is 0.29 (✓).</p>	<p>3 AO3 x3</p>	<p>AO3 – 3 marks 3x1 (✓) for limitations of the data evidence identified through critical questioning of the resource.</p>
	(b)	<p>Explain the features and processes at divergent plate boundaries.</p> <p>Level 3 (5-6 marks) Demonstrates thorough knowledge and understanding of the features and processes at divergent plate boundaries (AO1).</p> <p>This will be shown by including well-developed ideas about the features and processes at divergent plate boundaries.</p> <p>Level 2 (3-4 marks) Demonstrates reasonable knowledge and understanding of the features and processes at divergent plate boundaries (AO1).</p> <p>This will be shown by including developed ideas</p>	<p>6 AO1 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of the features and processes at divergent plate boundaries could potentially include:</p> <ul style="list-style-type: none"> divergent boundaries mark the divergence of two lithospheric plates. These plates move apart by convection currents which form in the asthenosphere below. These convection currents are believed to be driven by heat created by radioactive decay in the earth's core when two oceanic plates move apart by convection currents; melting of the upper mantle produces basaltic magma. Magma rises up to the sea bed forming a mid-ocean ridge, this process is known as sea floor spreading in some areas along the Mid-Atlantic ridge (spreading at a rate of 2-3cm per year), notably Iceland, the ridge reaches above sea level. As magma rises at the ridge

Question	Answer	Marks	Guidance
	<p>about the features and processes at divergent plate boundaries.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the features and processes at divergent plate boundaries (AO1).</p> <p>There may be simple ideas about the features and processes at divergent plate boundaries.</p> <p>0 marks No response or no response worthy of credit.</p>		<p>new lithosphere is created on the edges of the diverging plates and the new crust spreads laterally away from the ridge (sea floor spreading)</p> <ul style="list-style-type: none"> • along the crest of the ridge there may be rift valleys found (as along the mid-Atlantic) due to tensional forces created as the two plates move apart, ridges have an irregular pattern and are offset by transform faults, large cracks at right angles to the plate boundaries • as well as volcanic activity, constructive activities are characterised by shallow focus earthquakes associated with the rising magma and the tensional stress between plates sliding past each other along transform faults • eruption of magma underwater creates pillow lava formed by rapid cooling of lava creating rounded mounds • where divergence occurs beneath a continental plate it can lead to the development of a rift valley. As the divergence occurs, fracturing of the plates creates a rift and as extensional forces continue, faults form on either side of the rift. The central block then gradually slides down creating a rift valley such as the East Africa Rift Valley.

Question	Answer	Marks	Guidance
6	<p>Examine how climate change may be impacting the carbon cycle in the Arctic tundra.</p> <p>Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of climate change and the carbon cycle in the Arctic tundra (AO1).</p> <p>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 carbon cycle in the Arctic tundra (AO2).</p> <p>This will be shown by including well-developed ideas about climate change and the carbon cycle in the Arctic tundra.</p> <p>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.</p> <p>Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of climate change and the carbon cycle in the Arctic tundra (AO1).</p> <p>Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how climate change may be impacting the carbon cycle in the Arctic tundra (AO2).</p> <p>This will be shown by including well-developed ideas about either climate change or the carbon cycle in the</p>	<p>12 AO1 x6 AO2 x6</p>	<p>Indicative content</p> <p>AO1 – 6 Marks Knowledge and understanding of climate change and the carbon cycle in the Arctic tundra could potentially include:</p> <ul style="list-style-type: none"> • increase in surface and atmospheric temperatures • increasing atmospheric water vapour • climate modelling to show the importance of the carbon cycle • carbon cycles have inputs, outputs and stores, refer to Arctic tundra • physical factors affecting rates of flow and stores e.g. temperature, vegetation, organic matter in soil and mineral composition of rocks • short term and long term changes in the carbon cycle (including seasonality) • dynamic equilibrium in the cycle (balance between stores and flows). <p>AO2 – 6 marks Application of knowledge and understanding to analyse how climate change may be impacting the carbon cycle in the Arctic tundra could potentially include:</p> <ul style="list-style-type: none"> • permafrost is a vast carbon sink, rising Arctic temperatures (above 0 degrees for part of the year) causes a decline in permafrost (decomposition). Processes that move permafrost carbon from frozen to thawed releases the stored carbon, increasing the carbon pool. This carbon can then be released into the atmosphere • in the Arctic the rate of decomposition is usually slow and limited mainly to the summer months, a warming climate encourages faster decomposition and the release of nutrients for plant growth • rising temperatures increases the length of the growing

Question	Answer	Marks	Guidance
	<p>Arctic tundra and developed ideas for the other focus.</p> <p>There are clear attempts to make synoptic links between content from different parts of the course of study but these are not always appropriate.</p> <p>Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of climate change and the carbon cycle in the Arctic tundra (AO1).</p> <p>Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how climate change may be impacting the carbon cycle in the Arctic tundra (AO2).</p> <p>This will be shown by including developed ideas about either climate change or the carbon cycle in the Arctic tundra and simple ideas for the other focus.</p> <p>There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant.</p> <p>Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of climate change and the carbon cycle in the Arctic tundra (AO1).</p> <p>Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how climate change may be impacting the carbon cycle in the Arctic tundra (AO2).</p>		<p>season. There is increased photosynthesis so more atmospheric carbon dioxide is absorbed</p> <ul style="list-style-type: none"> • forest fires due to periods of drought can release a significant amount of carbon into the atmosphere. The forest fire destroys plants which can absorb carbon from the atmosphere • ecosystems in the Arctic tundra are changing and potentially adapting to climate changes such as plant growing seasons, growth rates and species composition however this cannot compensate for the thawing permafrost.

Question	Answer	Marks	Guidance
	<p>This will be shown by including simple ideas about climate change and the carbon cycle in the Arctic tundra.</p> <p>There are limited attempts to make synoptic links between content from different parts of the course of study.</p> <p>0 marks No response or no response worthy of credit.</p>		

Question	Answer	Marks	Guidance
7	<p>'It is more challenging to mitigate against communicable diseases in areas with human rights or territorial integrity conflicts'</p> <p>For either human rights conflicts or territorial integrity conflicts, how far do you agree with the statement?</p> <p>Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of communicable disease mitigation and areas of either human rights or territorial integrity conflicts (AO1).</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of the challenges to mitigating against communicable diseases in areas of human rights or territorial integrity conflicts (AO2).</p> <p>This will be shown by including well-developed ideas about communication disease mitigation and areas of either human rights or territorial integrity conflicts.</p> <p>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.</p> <p>Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of communicable disease mitigation and areas of either human rights or territorial integrity conflicts (AO1).</p>	<p>12 AO1 x6 AO2 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of mitigation against communicable diseases and human rights conflicts or territorial integrity conflicts could potentially include:</p> <ul style="list-style-type: none"> • direct strategies used by governments and international agencies • indirect strategies used by governments and international agencies • response to outbreaks at national and international scales • prediction of diseases by international organisations such as the World Health organisation • role of an NGO in dealing with a disease outbreak at national and local level • global and national campaigns for disease eradication <p>Human rights conflicts</p> <ul style="list-style-type: none"> • spatial patterns of human rights such as forced labour or maternal mortality rates • patterns of gender inequalities such as access to reproductive health services • violation of human rights can be a consequence of conflict such as inhospitable living conditions or lack of access to medical care <p>OR - Territorial integrity conflicts</p> <ul style="list-style-type: none"> • loss of territorial integrity through political boundaries, transnational corporations or dominance of ethnic groups • challenges to territorial integrity can cause conflicts such as access to natural resources • strategies for global governance in one area of conflict.

Question	Answer	Marks	Guidance
	<p>Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of the challenges to mitigating against communicable diseases in areas of human rights or territorial integrity conflicts (AO2).</p> <p>This will be shown by including well-developed ideas about either communication disease mitigation or areas of either human rights or territorial integrity and developed ideas for the other focus.</p> <p>There are clear attempts to make synoptic links between content from different parts of the course of study but these are not always appropriate.</p> <p>Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of the challenges to mitigating against communicable diseases in areas of human rights or territorial integrity conflicts (AO1).</p> <p>Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of the challenges to mitigating against communicable diseases in areas of human rights or territorial integrity conflicts (AO2).</p> <p>This will be shown by including developed ideas about either communication disease mitigation or areas of either human rights or territorial integrity and simple ideas for the other focus.</p> <p>There are some attempts to make synoptic links between content from different parts of the course of</p>		<p>AO2 – 6 marks Application of knowledge and understanding to analyse the challenges to mitigate against communicable diseases in areas with human rights or territorial integrity conflicts could potentially include:</p> <ul style="list-style-type: none"> • population movements due to conflict making vaccination and treatment programs difficult to coordinate • population density variations (refugee camps or informal settlements in LIDCs) and the impact this has on the rate of disease spread • role of international organisations such as the UN or NGOs e.g. Médecins Sans Frontières / Doctors Without Borders in coordinating relief and medical supplies in conflicts. The scale of a disease outbreak not always treatable with limited supplies • physical and geographical barriers such as mountains, lack of water, deserts leave some communities and groups (such as women) isolated and lack of accessibility impacts access to medical treatments • many communicable diseases are preventable through national and international strategies but lack of access to food and clean water or poor living conditions and poor sanitation creates a greater risk.

Question	Answer	Marks	Guidance
	<p>study but these are not always relevant.</p> <p>Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of the challenges to mitigating against communicable diseases in areas of human rights or territorial integrity conflicts (AO1).</p> <p>Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of the challenges to mitigating against communicable diseases in areas of human rights or territorial integrity conflicts (AO2).</p> <p>This will be shown by including simple ideas about communication disease mitigation and areas of either human rights or territorial integrity.</p> <p>There are limited attempts to make synoptic links between content from different parts of the course of study.</p> <p>0 marks No response or no response worthy of credit.</p>		

Question	Answer	Marks	Guidance
8	<p>Assess how the use of oceans is affected by either the global system of trade or the global system of migration.</p> <p>Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of the use of oceans and either the global trade system or the global system of migration (AO1).</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how the use of oceans is affected by either the global system of trade or the global system of migration (AO2).</p> <p>This will be shown by including well-developed ideas about the use of oceans and either the global trade system or the global system of migration.</p> <p>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.</p> <p>Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of the use of oceans and either the global trade system or the global system of migration (AO1).</p> <p>Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how the use of oceans is</p>	<p>12 AO1 x6 AO2 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding on the use of oceans and the global system of trade or global system of migration could potentially include:</p> <ul style="list-style-type: none"> • the use of biological, energy or mineral resources • the use of ocean systems as waste disposal sites, via pollution • the use of oceans by countries to exert their influence such as ports and marine conflict zones • the use of oceans as escape routes for migrants. <p>Global system of trade:</p> <ul style="list-style-type: none"> • spatial patterns of international trade • can promote stability or create inequalities through flows of people, money, ideas and technology • transport and communications have increased connectivity to global supply chains • increased connectivity through increased labour mobility. <p>OR – Global system of migration:</p> <ul style="list-style-type: none"> • spatial patterns of global migration • can promote stability or create inequalities through flows of people, money, ideas and technology • economic globalisation leading to emergence of new source areas and host destinations • conflict and persecution have led to increased numbers of refugees. <p>AO2 – 6 marks Application of knowledge and understanding to analyse how the use of oceans is affected by either the global system of trade or the global system of migration could potentially</p>

Question	Answer	Marks	Guidance
	<p>affected by either the global system of trade or the global system of migration (AO2).</p> <p>This will be shown by including well-developed ideas about either the use of oceans or either the global trade system or the global system of migration and developed ideas for the other focus.</p> <p>There are clear attempts to make synoptic links between content from different parts of the course of study but these are not always appropriate.</p> <p>Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of the use of oceans and either the global trade system or the global system of migration (AO1).</p> <p>Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how the use of oceans is affected by either the global system of trade or the global system of migration (AO2).</p> <p>This will be shown by including developed ideas about either the use of oceans or either the global trade system or the global system of migration and simple ideas for the other focus.</p> <p>There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant.</p> <p>Level 1 (1-3 marks)</p>		<p>include:</p> <ul style="list-style-type: none"> • varying demand for biological and mineral resources as raw materials to trade. The complexity of access to these resources particularly minerals will determine who has the right to trade them. The location of the resources and their distance travelled impacts on the financial costs of trade • oceans are increasingly being used as a means of transport for goods through increasing international trade. The world is becoming increasingly connected and shipping continues to evolve and become more mechanised such as containerisation. This leads to increasing port size and the growth of shipping routes • increased connectivity globally through economic globalisation means labour migrations have increased and there are new and emerging host and source areas via the oceans. However oceans have seen an increase in the number of illegal migrants and refugees through organised and systematic routes. Globally, there is increased awareness of this through media coverage • pollutants (domestic and industrial) affecting ocean systems can create inequalities in flows as major polluters don't always bare the environmental (impact on ecosystems) or economic costs. There can be implications on flows of money and / or technology to deal with the effects of pollutants • territorial waters such as the South China Sea can be sources of conflict as they are shipping routes and have great value to a number of countries. The South China Sea has two chains of islands with mineral resources and the area has high fish stocks. Disputes between China, Vietnam and the Philippines in particular relate to the geographical position of the

Question	Answer	Marks	Guidance
	<p>Demonstrates basic knowledge and understanding of the use of oceans and either the global trade system or the global system of migration (AO1).</p> <p>Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how the use of oceans is affected by either the global system of trade or the global system of migration (AO2).</p> <p>This will be shown by including simple ideas about the use of oceans and either the global trade system or the global system of migration.</p> <p>There are limited attempts to make synoptic links between content from different parts of the course of study.</p> <p>0 marks No response or no response worthy of credit.</p>		<p>islands, sovereignty rights, trade routes and access to resources.</p>

Question	Answer	Marks	Guidance
9	<p>Assess how globalisation of the food industry affects stores in water systems.</p> <p>Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of the globalisation of the food industry and the stores in water systems (AO1).</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how globalisation of the food industry affects stores in water systems (AO2).</p> <p>This will be shown by including well-developed ideas about globalisation of the food industry and the stores in water systems.</p> <p>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.</p> <p>Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of the globalisation of the food industry and the stores in water systems (AO1).</p> <p>Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how globalisation of the food industry affects stores in water systems (AO2).</p> <p>This will be shown by including well-developed ideas about either globalisation of the food industry or the</p>	<p>12 AO1 x6 AO2 x6</p>	<p>Indicative content AO1 – 6 marks Knowledge and understanding of globalisation of the food industry and stores in water systems could potentially include:</p> <ul style="list-style-type: none"> • globalisation of the food industry such as increased demand and global tastes such as fast foods • trans-national corporations and the scale of their operations to produce food for the global food market such as Unilever • globalisation of food could lead to opportunities for technological innovations such as GM crops, irrigation, hydroponics • stores in water systems such as groundwater supplies, water bodies (lakes and reservoirs), soil, vegetation and the atmosphere • stores of water vary in distribution and size and can change over time • stores of water can be influenced by a variety of inputs (precipitation) and outputs (evapotranspiration) • how water extraction such as groundwater extraction impacts the stores in the water cycle. <p>AO2 – 6 marks Application of knowledge and understanding to analyse how globalisation of the food industry affects stores in water systems could potentially include:</p> <ul style="list-style-type: none"> • irrigation affects the quantity of groundwater stores, altering the hydrological conditions from installation. Aquifers experience seasonal fluctuations in groundwater levels throughout the year. Irrigation can increase rates of evaporation however groundwater can also be recharged via infiltration and deep percolation • population growth can increase the demand for food

Question	Answer	Marks	Guidance
	<p>stores in water systems and developed ideas for the other focus.</p> <p>There are clear attempts to make synoptic links between content from different parts of the course of study but these are not always appropriate.</p> <p>Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of the globalisation of the food industry and the stores in water systems (AO1).</p> <p>Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how globalisation of the food industry affects stores in water systems (AO2).</p> <p>This will be shown by including developed ideas about either globalisation of the food industry or the stores in water systems and simple ideas for the other focus.</p> <p>There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant.</p> <p>Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of the globalisation of the food industry and the stores in water systems (AO1).</p> <p>Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how globalisation of the food industry affects stores in water systems (AO2).</p>		<p>supplies overall especially with crops such as rice. Rice needs significant water in which to grow which can lead to greater land areas saturated and higher rates of evapotranspiration</p> <ul style="list-style-type: none"> • groundwater mining with wells for agricultural use can cause water levels to fall and this can be unsustainable • westernisation of diets due to globalisation at a mass market scale impacts on food production e.g. animal feed for meat production leads to a greater demand on water supplies • GM crops produced due to increased consumer demand are rapid growing and need more water and nutrients; this can drain water tables and soil water stores • technological innovations such as hydroponics could lead to strains on groundwater supplies or particular rainwater gathering techniques could lead to groundwater supplies being maintained • if one country exports a water-intensive product to another country, it can support the other country in their water needs (virtual water). Depending on levels of trade will vary the impact on water systems but it is likely to be low • the intensity of crop growth such as cereals due to consumer demand can improve the drainage of soils as root networks access soil water stores however irrigation techniques can encourage water logging where drainage is poor and the water table rises.

Question	Answer	Marks	Guidance
	<p>This will be shown by including simple ideas about globalisation of the food industry and the stores in water systems.</p> <p>There are limited attempts to make synoptic links between content from different parts of the course of study.</p> <p>0 marks No response or no response worthy of credit.</p>		

Question	Answer	Marks	Guidance
10	<p>Examine how the risks from tectonic hazards affect place making processes.</p> <p>Level 4 (10-12 marks) Demonstrates comprehensive knowledge and understanding of risks from tectonic hazards and place making processes (AO1).</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide clear, developed and convincing analysis that is fully accurate of how the risks from tectonic hazards affect place making processes (AO2).</p> <p>This will be shown by including well-developed ideas about risks from tectonic hazards and place making processes.</p> <p>There are clear and explicit attempts to make appropriate synoptic links between content from different parts of the course of study.</p> <p>Level 3 (7-9 marks) Demonstrates thorough knowledge and understanding of risks from tectonic hazards and place making processes (AO1).</p> <p>Demonstrates thorough application of knowledge and understanding to provide clear and developed analysis that shows accuracy of how the risks from tectonic hazards affect place making processes (AO2).</p> <p>This will be shown by including well-developed ideas about either risks from tectonic hazards or place</p>	<p>12 AO1 x6 AO2 x6</p>	<p>Indicative content</p> <p>AO1 – 6 marks Knowledge and understanding of the risks from tectonic hazards and place making processes could potentially include:</p> <ul style="list-style-type: none"> • changes in the frequency and impacts of tectonic hazards over time • degree of risk posed by a hazard and the probability of the hazard event occurring • reasons why people choose to live in tectonically active locations • future strategies to cope with risks from tectonic hazards • how governments and organisations attempt to present places to the wider world to attract inward investment and regeneration • why places rebrand through reimagining and regeneration to construct a different place meaning • range of strategies can be used to rebrand places such as art, heritage and architecture. These can be used to change a place meaning • range of players and their role in placemaking such as governments, not for profit or community groups <p>AO2 – 6 marks Application of knowledge and understanding to analyse how the risks from tectonic hazards affect place making processes could potentially include:</p> <ul style="list-style-type: none"> • places prone to tectonic hazards such as California have a variety of strategies to mitigate against the risks, which creates a particular place meaning and enables communities to live with the risks • regeneration following a tectonic event such as the Christchurch earthquake can be more about rebuilding

Question	Answer	Marks	Guidance
	<p>making processes and developed ideas for the other focus.</p> <p>There are clear attempts to make synoptic links between content from different parts of the course of study but these are not always appropriate.</p> <p>Level 2 (4-6 marks) Demonstrates reasonable knowledge and understanding of risks from tectonic hazards and place making processes (AO1).</p> <p>Demonstrates reasonable application of knowledge and understanding to provide sound analysis that shows some accuracy of how the risks from tectonic hazards affect place making processes (AO2).</p> <p>This will be shown by including developed ideas about either risks from tectonic hazards or place making processes and simple ideas for the other focus.</p> <p>There are some attempts to make synoptic links between content from different parts of the course of study but these are not always relevant.</p> <p>Level 1 (1-3 marks) Demonstrates basic knowledge and understanding of risks from tectonic hazards and place making processes (AO1).</p> <p>Demonstrates basic application of knowledge and understanding to provide simple analysis that shows limited accuracy of how the risks from tectonic hazards affect place making processes (AO2).</p>		<p>what was there to preserve the place meaning</p> <ul style="list-style-type: none"> • where places are considered or perceived to be 'riskier' due to the frequency of tectonic hazards it can be challenging for players to encourage inward investment for regeneration • there can be a time lapse between tectonic hazards occurring and the regeneration of places such as the Montserrat eruption. The government are working with a number of not for profit organisations as they are looking to re-establish communities in the south of the Island. The complexities of the place making processes have included where it is safe for communities to establish themselves, what the physical buildings will look like and be organised, how the communities will reimagine themselves to create a different place meaning • role of players in tectonically hazardous areas and in place making processes are key to mitigating against the risks, encouraging investment, rebranding and reimagining. These players act as gatekeepers influencing the degree to which the risks are dealt with in place making processes.

Question	Answer	Marks	Guidance
	<p>This will be shown by including simple ideas about risks from tectonic hazards and place making processes.</p> <p>There are limited attempts to make synoptic links between content from different parts of the course of study.</p> <p>0 marks No response or no response worthy of credit.</p>		

Question	Answer	Marks	Guidance
11*	<p>'The vulnerability of people to the impacts of climate change is mainly the result of economic factors.' Discuss.</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of the vulnerability of people to the impacts of climate change.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of vulnerability of people to the impacts of climate change.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of vulnerability of people to the impacts of climate change.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of vulnerability of people to the impacts of climate change.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 factors which affect the vulnerability of people to the impacts of climate change.</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether the vulnerability of people to</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Demonstrating knowledge and understanding of the impacts of climate change in a variety of contexts could potentially include:</p> <ul style="list-style-type: none"> • rising sea levels e.g. effect on island communities such as Pacific or Indian Ocean islands; barrier beach communities along east coast of USA; delta dwelling communities such as in Bangladesh • change in ecosystems e.g. savannah lands in Africa such as Kenya and its herding people experiencing greater variability in rainfall with the consequent effect on pasture growth; tropical rainforest dwellers in Amazon basin experiencing changed rainfall patterns • impacts on human health e.g. more intense heat waves in western Europe / southern USA; invasion and spread of diseases and viruses e.g. malaria to currently unaffected areas such as southern Europe • reductions in extent and thickness of sea ice e.g. in Arctic threatening traditional way of life of indigenous peoples such as Inuit • increased intensity of storms e.g. impact of Typhoon Pam, Vanuatu. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the influence of different factors which affect the vulnerability of people to the impacts of climate change, with economic factors as the focus, could potentially include:</p> <ul style="list-style-type: none"> • ACs can afford coastal flood defences such as Netherlands Delta Plan and Thames flood barrier. LIDCs such as Bangladesh cannot

Question	Answer	Marks	Guidance
	<p>the impacts of climate change is mainly the result of economic factors.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of factors which affect the vulnerability of people to the impacts of climate change.</p> <p>Demonstrates thorough application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to whether the vulnerability of people to the impacts of climate change is mainly the result of economic factors.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of factors which affect the vulnerability of people to the impacts of climate change.</p> <p>Demonstrates reasonable application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether the vulnerability of people to the impacts of climate change is mainly the result of economic factors.</p> <p>Concepts are discussed but their use lacks precision.</p>		<ul style="list-style-type: none"> • ACs can afford water supply management to cope with decreased precipitation and or increased variability such as Australia / S. California. LIDCs such as Mali cannot • ACs can afford technology to predict storms such as hurricanes or depressions and thereby reduce vulnerability and loss. LIDCs cannot • ACs have the resources to combat health risks. LIDCs do not • national programmes e.g. Malawi’s National Adaptation Programmes of Action (NAPA) e.g. afforestation of catchments • many low cost schemes around the world reduce vulnerability of communities to impacts, such as basic cyclone and storm surge warnings in Bangladesh or improved communication of rainfall patterns in East Africa • individual people of higher economic status can reduce their vulnerability as they can afford mitigation such as moving away from areas prone to coastal flooding • even wealthy communities have a limit to their monetary power to deal with climate change e.g. not all coastlines can be defended even in the USA or UK • the relationship between economic factors and vulnerability which can apply at a variety of scales, e.g. national, community, individuals • The relationship between other factors (environmental, social, political) and vulnerability of people to climate change such as: <ul style="list-style-type: none"> ○ effects of change in temperature and precipitation regimes on availability and access to food.

Question	Answer	Marks	Guidance
	<p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of factors which affect the vulnerability of people to the impacts of climate change.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether the vulnerability of people to the impacts of climate change is mainly the result of economic factors.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited</p>		<ul style="list-style-type: none"> ○ dependence of a society on climate sensitive sectors such as agriculture, forestry and fisheries ○ ability of societies to adapt to change e.g. in agricultural practices ○ effectiveness of governments to respond to extreme weather or effects on human health.

Question	Answer	Marks	Guidance
	<p>evidence.</p> <p>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.</p>		

Question	Answer	Marks	Guidance
12*	<p>'Physical factors influence climate change more than human factors.' Discuss.</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of physical and human factors that influence climate change.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of physical and human factors that influence climate change.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of physical and human factors that influence climate change.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of physical and human factors that influence climate change.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 physical and human factors influence climate change.</p> <p>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 physical factors influence climate change more than human factors.</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of physical and human factors that influence climate change could potentially include:</p> <ul style="list-style-type: none"> • physical / natural factors influencing climate change include tectonic events such as volcanic eruptions; cyclic changes in the earth's orbit and axis / Milankovitch cycles; variation in sunspot activity / solar energy; role of El Niño / La Niña in context of extreme events • human / anthropogenic factors influencing climate change include levels of CO₂ directly linked to combustion of fossil fuels; increases in CH₄ due to increasing numbers of livestock, increased acreage of rice padi; deforestation; and draining of wetlands • long term dynamism e.g. gradual cooling over the past 100 million years – fossil records of changing distribution of plants and animals • ice ages and interglacials of the past 2.5 million years – ice core evidence of CO₂ and oxygen isotope concentrations • during our current interglacial i.e. the last 10,000 years, especially the last 1,000 years - tree rings and pollen sequences; historical records such as diaries, paintings, harvest records • short-term recent changes e.g. last 150 years – instrumental records of air and ocean temperatures and changes in intensity and frequency of weather events such as tropical storms. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate whether physical factors influence climate change more than human factors could potentially</p>

	<p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how physical and human factors influence climate change.</p> <p>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 physical factors influence climate change more than human factors.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how physical and human factors influence climate change.</p> <p>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 physical factors influence climate change more than human factors.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how physical and human factors influence climate</p>	<p>include:</p> <ul style="list-style-type: none"> • glacial and inter-glacial climatic changes which were natural events • the greenhouse effect which is a natural occurrence but it has been enhanced especially after industrialisation in the 19th century • the effects of negative and positive feedback in the earth-atmosphere system whereby the damaging effects of positive feedback may lead to a tipping point at which climate change becomes rapid and irreversible, and where negative feedback may lead to global dimming • role of the IPCC (Intergovernmental Panel on Climate Change) and other scientific organisations such as NOAA (National Oceanographic and Aeronautical Administration) in advancing knowledge and understanding of changes • the existence of a sceptical scientific point of view which includes arguments about accuracy of data, reliability of past data and places emphasis on natural processes such as variations in solar activity and frequency of volcanic eruptions • the role of political factors in the assessment of climate change such as the view from governments relying on fossil fuels to support development e.g. China, USA and Australia • data from ice cores only go back so far in time; tree ring and pollen data is regional not global • recording of data has improved e.g. quality of instruments such as thermometers, so how accurate and reliable are the data from the past.
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		<p>change.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether physical factors influence climate change more than human factors.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p> <p>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.</p>		
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Question	Answer	Marks	Guidance
13*	<p>Assess the relative importance of social factors influencing the spread of disease.</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of factors that influence the spread of disease.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of factors that influence the spread of disease.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of factors that influence the spread of disease.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of factors that influence the spread of disease.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 importance of factors which influence the spread of disease.</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to the relative</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of the influence of different factors on the spread of disease, with social factors the focus, could potentially include:</p> <ul style="list-style-type: none"> • social factors such as physical contact with infected individuals (measles), exchange of body fluids in sexual intercourse (HIV/Aids), contaminated materials such as food (typhoid), airborne inhalation (tuberculosis), population movements, population density • socio-economic factors such as access to clean water, sanitation, level of development re quality and quantity of health care • political factors such as national strategies for screening, funding, health education and immunisation and other medical technologies, international border control, international strategies such as the work of WHO and NGOs • physical factors such as weather conditions, relief, water sources, conditions for vectors (malaria), natural hazards e.g. earthquakes, climate change (seasonal and long term) • technology such as global transport systems / networks, vaccine development • disease diffusion and spread to new areas (Hagerstrand model), including phases of diffusion, physical and socio-economic barriers. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the relative importance of social factors influencing the spread of disease could potentially include:</p>

Question	Answer	Marks	Guidance
	<p>importance of social factors influencing the spread of disease.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the importance of factors which influence the spread of disease.</p> <p>Demonstrates thorough application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to the relative importance of social factors influencing the spread of disease.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of the importance of factors which influence the spread of disease.</p> <p>Demonstrates reasonable application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to the relative importance of social factors influencing the spread of disease.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks)</p>		<ul style="list-style-type: none"> • the significance of different transmission pathways for the different types of infectious disease such as HIV/Aids (body fluids, shared needles, mother to unborn child), influenza (airborne inhalation of the ‘flu virus, especially in winter), malaria (tropical disease spread by mosquitoes) • high density living conditions in overcrowded squatter settlements related to rate of spread of disease outbreak • impact of increased movements of people globally in relation to government advice on travel and screening at airports • rising standards of living such as food supplies, access to clean water can impact upon susceptibility to disease and influence a countries epidemiological transition • level of development of a country which may affect health care, standards of living, housing conditions and immunisation programmes and, in ACs, lead to decline in prevalence of infectious disease • effects of international strategies such as UNAids to combat the spread of the virus (Aids related deaths in Africa fell from 1.2 m in 2012 to 790,000 in 2014) • level of funding by national governments and philanthropic organisations such as the Gates Foundation.

Question	Answer	Marks	Guidance
	<p>Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the importance of factors which influence the spread of disease.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the relative importance of social factors influencing the spread of disease.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p>		

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	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	Marks	Guidance
14*	<p>'Increased global mobility is the most important influence on the spread of communicable diseases.' How far do you agree with this statement?</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of factors that influence the spread of communicable diseases, including global mobility.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of factors that influence the spread of communicable diseases, including global mobility.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of factors that influence the spread of communicable diseases, including global mobility.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of factors that influence the spread of communicable diseases, including global mobility.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 importance of factors which influence the spread of disease of communicable diseases.</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of factors that influence the spread of communicable diseases, including global mobility, could potentially include:</p> <ul style="list-style-type: none"> • increased global mobility linked to globalisation processes of travel and trade can lead to spread of disease through growth of international transport networks e.g. airports capable of handling wide-bodied aircraft / frequency of flights; high-speed rail networks; personal mobility, increased car ownership, tunnels, bridges, ferries and shipping • increased global mobility enables people to respond to disease crises in a greater number of locations, limiting the spread of disease at different scales e.g. NGO workers and the 2014 West Africa Ebola outbreak • disease diffusion and spread to new areas (Hagerstrand model), including the phases of diffusion, and the effects of physical and socio-economic barrier • rates of spread of infectious diseases and scale / diversity of areas affected including named disease outbreaks such as H1N1 or Ebola • other factors influencing spread of disease include: <ul style="list-style-type: none"> ○ social factors, such as physical contact with infected individuals; exchange of body fluids in sexual intercourse; airborne inhalation; population movements ○ political factors, such as national policies and international strategies which restrict travel or train medical staff to prevent the global spread of a disease outbreak ○ physical factors, such as physical barriers,

Question	Answer	Marks	Guidance
	<p>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 increased global mobility is the most important influence on the spread of communicable diseases.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of the importance of factors which influence the spread of disease of communicable diseases.</p> <p>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 increased global mobility is the most important influence on the spread of communicable diseases.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of the importance of factors which influence the spread of disease of communicable diseases.</p> <p>Demonstrates reasonable application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of</p>		<p>relief, natural hazards, remoteness of communities, which affect mitigation and response efforts in dealing with disease</p> <ul style="list-style-type: none"> ○ level of development, health care, access to clean water and sanitation ○ medical technologies linked to disease. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate whether increased global mobility is the most important influence on the spread of communicable diseases could potentially include:</p> <ul style="list-style-type: none"> ● high levels of personal mobility have caused the spatial pattern / spread of the disease to be more extensive and more difficult to contain ● high levels of personal mobility have caused the rate of spread of the disease over time to be faster and more difficult to contain ● increased mobility in terms of transport technology is important in distributing medicines more successfully e.g. refrigeration of vaccines ● other physical, social, economic and political factors contribute to the spread of disease irrespective of increased global mobility ● technology other than transport has had increasingly significant effects on spread of disease, e.g. in prediction, mitigation strategies and response or in detection and treatment (scanners, lasers and key-hole surgery) and genome projects ● international strategies can attempt to contain infectious diseases such as government advice on travel, airport monitoring, international collaboration.

Question	Answer	Marks	Guidance
	<p>evidence as to whether increased global mobility is the most important influence on the spread of communicable diseases.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of the importance of factors which influence the spread of disease of communicable diseases.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether increased global mobility is the most important influence on the spread of communicable diseases.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p>		

Question	Answer	Marks	Guidance
	<p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p> <p>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.</p>		

Question	Answer	Marks	Guidance
15*	<p>To what extent can ocean energy and sea-bed mineral resources be managed sustainably?</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of ocean energy and sea-bed mineral resources and their management.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of ocean energy and sea-bed mineral resources and their management.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of ocean energy and sea-bed mineral resources and their management.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of ocean energy and sea-bed mineral resources and their management.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>Demonstrates comprehensive application of knowledge and</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of ocean energy and sea-bed mineral resources and their management, could potentially include:</p> <ul style="list-style-type: none"> • oil and gas - non-renewable • wave and tidal energy - renewable, (flow resources) • sea-bed minerals, ferrous and non-ferrous - non-renewable • the significance of their location within the ocean in relation to the zones extending out from land determining the degree of control a country can exercise over these resources • the concept of the ‘global commons’ • exploration for energy and sea-bed mineral resources e.g. Deepwater Horizon drilling rig disaster 2010 • extraction of energy and sea-bed mineral resources e.g. Deepwater Horizon drilling rig disaster 2010; the impacts of tidal schemes e.g. La Rance, Brittany • transport of energy and mineral resources e.g. oil spill from tankers such as Exxon Valdez 1989. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the extent to which sustainable management of ocean energy and sea-bed mineral resources can or cannot be achieved, could potentially include:</p> <ul style="list-style-type: none"> • exploration of the concept of sustainability - the Brundtland Commission of 1983, ‘that sustainable

Question	Answer	Marks	Guidance
	<p>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 ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>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 ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>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 ocean energy and sea-bed mineral resources can be managed sustainably.</p>		<p>development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.’</p> <ul style="list-style-type: none"> • a relatively straightforward analysis of the concepts of renewable and non-renewable resources, suggesting that renewable resources can be sustainably managed whereas non-renewable cannot • higher level evaluation might consider the sustainability of strategies to address issues such as the environmental impact of wave and tidal energy schemes e.g. tidal barrages • management of pollution episodes, for example oil spills, on environments and ecosystems is relevant. Large-scale tanker accidents seem less common in recent times and perhaps indicate a more sustainable element of oil and gas exploitation • national scale management of waters close to and further away from the coast such as territorial waters / exclusive economic zones (EEZs) and the relative success of these strategies in managing resources sustainably • international scale resource management through frameworks such as the United Nations Convention on the Law of the Sea (UNCLOS) including the concept of the high seas.

Question	Answer	Marks	Guidance
	<p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the extent to which ocean energy and sea-bed mineral resources can be managed sustainably.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with</p>		

Question	Answer	Marks	Guidance
	<p>limited structure. The information is supported by limited evidence.</p> <p>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.</p>		

Question	Answer	Marks	Guidance
16*	<p>How far do you agree that effects of climate change on oceans bring more opportunities than threats?</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of the effects of climate change on oceans.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of the effects of climate change on oceans.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of the effects of climate change on oceans.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of the effects of climate change on oceans.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 effects of climate change on oceans bring opportunities and threats.</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether the effects of climate change on oceans bring more opportunities than</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of the effects of climate change on oceans, could potentially include:</p> <ul style="list-style-type: none"> • amount of heat stored in the oceans has increased significantly since the 1950s, which affects sea surface temperature • acidification – increased levels of carbon dioxide in the atmosphere which dissolves in the water affects the chemistry of sea water • rising sea level – expansion of the oceans as their surface waters heat up, plus the contribution of melting glaciers and ice sheets • changes to the extent (decreasing) and thickness (thinning) of sea ice, especially in the Arctic in the last thirty to forty years • changes in the transfer of energy as a result of changes to ocean currents • rising temperatures of the oceans and impact on coral ecosystems such as loss in biodiversity and local communities. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate how far the effects of climate change on oceans bring more opportunities than threats could potentially include:</p> <ul style="list-style-type: none"> • sea level rise is a potential disaster for densely populated low lying areas such as Bangladesh or for small island states • sea level rise combined with more intense and more frequent storms may lead to more coastal flooding and increased costs for construction and

Question	Answer	Marks	Guidance
	<p>threats.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>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 effects of climate change on oceans bring opportunities and threats.</p> <p>Demonstrates thorough application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to whether the effects of climate change on oceans bring more opportunities than threats.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how the effects of climate change on oceans bring opportunities and threats.</p> <p>Demonstrates reasonable application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether the effects of climate change on oceans bring more opportunities than threats.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and</p>		<p>maintenance of sea walls</p> <ul style="list-style-type: none"> • changes to ocean currents leads to changes in climate patterns e.g. stronger storms in the tropics with loss of life and property damage especially on the coasts • loss of Arctic sea ice leads to reduction in ice albedo which contributes to positive feedback effects and even more rapid melting • rising ocean temperatures may lead to coral bleaching, with the ecological effect of loss of reef biodiversity plus loss of commercial value for fishing and tourism • krill populations are sensitive to ocean temperature change e.g. in the Southern Ocean / Antarctica with serious effects on food chain • changes to the extent of sea ice in the Arctic will lead to commercial benefits for shipping / trade • the legacy of glacial and interglacial sea level change can be seen in UK agricultural and transport systems and tourism in coastal areas • threats to ecosystems such as polar bears populations, fish stocks such as Arctic char, to way of life of indigenous peoples e.g. Inuit –hunting of walrus and seals, and Caribou herding as migration patterns alter • geo-politically the Arctic Ocean has become more contested as bordering nations jostle for power and influence in the region e.g. Russia, Canada, USA, Norway • reduction in salinity of Arctic Ocean with the potential to disrupt the Arctic Conveyor (Atlantic thermohaline circulation). This threatens the operation of the Gulf Stream with subsequent impacts on the climate and length of growing seasons of north-west Europe.

Question	Answer	Marks	Guidance
	<p>understanding to provide a simple analysis that shows limited accuracy of how the effects of climate change on oceans bring opportunities and threats.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether the effects of climate change on oceans bring more opportunities than threats.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p> <p>Level 1 The information is basic and communicated in an unstructured</p>		<ul style="list-style-type: none"> • opportunities for ecosystem could lead to increased numbers of cod and herring • transport routes for shipping allowing globalised trade to use northern passages for longer in the year • energy and mineral exploitation is made more possible with less sea ice and improved transport possibilities.

Question	Answer	Marks	Guidance
		way. The information is supported by limited evidence and the relationship to the evidence may not be clear.	

Question	Answer	Marks	Guidance
17*	<p>'Threats to food security are greatest in dryland areas'. Discuss.</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of threats to food security in dryland and other areas.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of threats to food security in dryland and other areas.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of threats to food security in dryland and other areas.</p> <p>Level 1 (1–2 marks) Demonstrates reasonable knowledge and understanding of threats to food security in dryland and other areas.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 threats to food security differ in dryland and other areas.</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based as to whether the threats to food security are greatest in dryland areas.</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of the factors responsible for threats to food security in dryland and other areas, with drylands the focus, could potentially include:</p> <ul style="list-style-type: none"> • complex concept of food security, and how patterns of food security vary spatially • food security risks and vulnerability • physical factors such as climate (rainfall and temperature), climate change, periodic drought, air, soils (organic content, ability to retain moisture, erosion), relief (effects of slope and elevation on crop production / grazing), water supplies, pests and diseases • human factors such as population change, labour, capital and household income/ expenditure balance, land ownership (size of farm and tenure) including female rights, technology, market availability; and the marketing system, land grabbing, fall in demand / global prices, over-exploitation of water, overgrazing, over-irrigation and salinisation of soils. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate whether threats to food security are greatest in dryland areas could potentially include:</p> <ul style="list-style-type: none"> • the threats to food security by different combinations of factors in different types of dryland systems (polar, mid- and low-latitude deserts and semi-arid environments) • the risk and vulnerability to food security threatened by shocks presented by both the natural environment and economic events

		<p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how threats to food security differ in dryland and other areas.</p> <p>Demonstrates thorough application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions as to whether the threats to food security are greatest in dryland areas.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how threats to food security differ in dryland and other areas.</p> <p>Demonstrates reasonable application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence as to whether the threats to food security are greatest in dryland areas.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how threats to food security differ in dryland and</p>	<ul style="list-style-type: none"> • over-exploitation of water leading to water shortages and lower crop yields as population growth increases the demand for food increases • problems of food security arising because of the effects of desertification, including deforestation to create more farmland, top-soil erosion by wind deflation and the effects of salinisation – all of which are examples of positive feedback with regard to economic use of dryland systems • poor farming practices which lead to food shortages, such as use of poor / inadequate seed, often the result of low educational attainment and insufficient government involvement • the human rights issue of lack of property / land ownership rights of females in some countries where profits from the harvest are taken over by men and wasted on alcohol • there is variation in food security between countries and within countries within an ecosystem. This might depend on proximity to water supply such as an exotic river, or government investment in agricultural and transport technology e.g. parts of Egypt, or a political factor such as the effects of conflict e.g. parts of South Sudan • even in ACs some indigenous societies in drylands their food security is under threat through climate change or land grabbing e.g. Inuit, Arctic Canada or aborigines, Simpson Desert, Australia • drylands relative to other fragile environments e.g. factors affecting food security for inhabitants of degraded cold mountain environments - Himalayas, Nepal
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	<p>other areas.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether the threats to food security are greatest in dryland areas.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p> <p>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.</p>	<ul style="list-style-type: none"> • dryland areas can be impoverished with more remote communities so access to food is increasingly restricted • political instability e.g. Zimbabwe places restrictions on trade with fewer imports of food and redistribution of land which has increased the threat to food security or Liberia as a conflict zone which has low economic development and increased threats to food security • food security can be threatened on a variety of scales, urban areas e.g. New York where impoverished families have to access food banks, food stamps and health bucks to ensure they have access to food • Malthusian idea - fragile physical environments (drylands) cannot support population growth and food supplies diminish.
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Question	Answer	Marks	Guidance
18*	<p>'Imbalances in global food production have a greater impact on people than the environment.' Discuss</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of the impacts of global food production on people and the environment.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of the impacts of the global food production on people and the environment.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of the impacts of the global food production on people and the environment.</p> <p>Level 1 (1–2 marks) Demonstrates reasonable knowledge and understanding of the impacts of the global food production on people and the environment.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 imbalances in global food production impact people and the environment.</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of impacts of global food production on people and the environment, could potentially include:</p> <ul style="list-style-type: none"> • global food production methods vary from intensive to extensive and subsistence to commercial • physical conditions required for growing food e.g. air, climate, soil and water • food production as a system of growing, processing, transporting and disposing of waste • impacts on the physical environment, such as: water availability e.g. falling ground water levels, water quality e.g. a rise in nitrate level, reduction of bio-diversity in ecosystems, impacts on landscape, food miles which in turn impact on greenhouse gas emissions which then impact human populations, effects of irrigation and salinisation of water and soils on crop yields, decline in quality of pasture through overgrazing of marginal land • impacts on people, such as: decreasing food security for some which can lead to increased chance of under-nutrition, malnutrition, famine and starvation, the effect of food surpluses on diet and human health, impacts on human health through the accumulation of chemicals through food chains, rural to urban migration due to inability to make a living from farming, loss of agricultural employment due to increasing scale of capital-intensive, mechanised farming (agri-business).

Question	Answer	Marks	Guidance
	<p>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 imbalances in global food production have a greater impact on people than the environment.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how imbalances in global food production impact people and the environment.</p> <p>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 imbalances in global food production have a greater impact on people than the environment.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how imbalances in global food production impact people and the environment.</p> <p>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 imbalances in global food production</p>		<p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate imbalances in global food production and their impact on people and the environment, could potentially include:</p> <ul style="list-style-type: none"> • scale of food production affects the type and scale of impacts. Subsistence farming e.g. rice padis are intensive farming providing food supplies for families / communities, they have fewer impacts on the environment. Commercial farming can require more inputs for food production such as animal feed, chemicals, mechanisation and this can impact on the seasonality of employment, technical innovations and the physical environment can be put under pressure but this depends on government regulations • the effects of falling levels of groundwater resulting from over-exploitation presents environmental challenges such as soil erosion, contributing to increase in sediment loads and disruption to fauna and flora in fragile ecosystems, e.g. Draa Valley, Morocco • in semi-arid environments over-irrigation causes severe waterlogging and soil salinity problems – a form of land degradation e.g. Kushab region of north Pakistan • degraded croplands and pasture in areas subject to desertification caused by overgrazing or extending cultivated areas at the expense of woodland may lead to wind deflation of the surface; this contributes to food shortages, human health problems and increasing poverty e.g. parts of western Mali • intensive cropping and agricultural policies affect the

Question	Answer	Marks	Guidance
	<p>have a greater impact on people than the environment.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how imbalances in global food production impact people and the environment.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to whether imbalances in global food production have a greater impact on people than the environment.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p>		<p>environment where there is increasing use of agro-chemicals, leading to water pollution and toxic effects on aquatic plants and animals e.g. Fenland areas (East Anglia)</p> <ul style="list-style-type: none"> • increasing the area under cultivation by removal of hedgerows and can lead to loss of habitats, and contribute to increased soil erosion e.g. on the lighter soils of east Suffolk • farm amalgamation to increase economies of scale in agricultural production can lead to loss of feeding and nesting sites for farmland birds such as skylarks • global food production is by nature imbalanced as countries and regions (at varying levels of development) farm at a variety of scales, impacts on people and the environment vary in response to these scales. Impacts can however be mitigated dependent upon government and agency decision making.

Question	Answer	Marks	Guidance
	<p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p> <p>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.</p>		

	Answer	Marks	Guidance
19*	<p>Assess the importance of governments in reducing the risks of tectonic hazards over time.</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of measures to reduce the risks of tectonic hazards over time.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of measures to reduce the risks of tectonic hazards over time.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of measures to reduce the risks of tectonic hazards over time.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of measures to reduce the risks of tectonic hazards over time.</p> <p>0 marks No response or no response worthy of credit.</p> <p>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 governments are involved in reducing the risks of tectonic hazards.</p> <p>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 importance of governments in reducing the risks of tectonic hazards over</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of measures to reduce the risks of tectonic hazards over time, could potentially include:</p> <ul style="list-style-type: none"> • a range of tectonic hazards, including volcanoes (lava flows; ash falls; pyroclastic flows; lahars; poisonous gases) and earthquakes (ground shaking; liquefaction; mass movements such as landslides; tsunamis) • the degree of risk they pose; and mitigation - against the event itself, vulnerability to it, and any losses. • countries have resources to monitor and predict volcanic eruption e.g. monitoring seismic activity, sampling gases, measuring ground deformation • ACs have resources to try to deal with lava flows e.g. diversion of small scale flows on slopes of Etna; spraying water to halt flow e.g. Heimaey, Iceland • ACs have resources to design and build earthquake resistant structures e.g. steel cross-bracing / counter-weights / shock absorbers in foundations / automatic cut-offs for electricity and gas • countries have varying resources for effective disaster planning e.g. education programmes / search and rescue facilities / medical facilities • how and why the frequency and impacts of risks from tectonic hazards have changed over time. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate the importance of governments in reducing the risks of tectonic hazards over time could potentially include:</p>

	Answer	Marks	Guidance
	<p>time.</p> <p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how governments are involved in reducing the risks of tectonic hazards.</p> <p>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 importance of governments in reducing the risks of tectonic hazards over time.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how governments are involved in reducing the risks of tectonic hazards.</p> <p>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 importance of governments in reducing the risks of tectonic hazards over time.</p> <p>Concepts are discussed but their use lacks precision.</p>		<ul style="list-style-type: none"> • role of magnitude of event e.g. even an AC such as Japan had serious impacts from high energy earthquake events (Kobe 1995 and Tohoku 2011); ash cloud from Eyjafjallajökull (Iceland 2010) impacted on people and places of high levels of development such as Western Europe • in general, impacts tend to be more severe for locations towards the lower end of the development continuum because governments of LIDCs and EDCs are unable to devote sufficient resources to reducing risk and vulnerability • level of social and or political organisation can be significant. A dysfunctional government can exacerbate impacts e.g. Haiti earthquake, 2010. Chile as an EDC, can with fairly effective organisation, minimise the impacts of tectonic hazards despite its location on the ‘Ring of Fire.’ • in LIDCs, governments find difficulty in effective mitigation since for example farming communities that live and work on the slopes of a volcano are unwilling to move because of their livelihood / traditions, or see no need to because of the infrequency of eruptions • support for LIDCs risk reduction and disaster planning could be provided by other governments and agencies who can monitor the probability of risk e.g. USGS • government spending on risk reduction in EDCs such as China, India or Mexico has increased in a relatively short time in the 21st century – but so far only in a limited number of localities • it is not only governments that reduce the risks of tectonic hazards but a number of organisations and agencies e.g. town planners, hazard monitoring

	Answer	Marks	Guidance
	<p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how governments are involved in reducing the risks of tectonic hazards.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions as to the importance of governments in reducing the risks of tectonic hazards over time.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p>		<p>agencies, emergency teams as they can take into account factors, such as: population densities, housing styles, hazard awareness, public education, early warning systems, availability and readiness of emergency personnel</p> <ul style="list-style-type: none"> reducing risks over time can be related to level of understanding of the risk, frequency of the risk, probability of the hazard occurring, access to data and monitoring techniques. It can also be related to planning strategies, levels of awareness and understanding as well as access to sufficient funds.

			Answer	Marks	Guidance
			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	Marks	Guidance
20*	<p>‘Earthquakes generate only local hazards.’ Discuss.</p> <p>AO1 Level 4 (7–9 marks) Demonstrates comprehensive knowledge and understanding of hazards generated by earthquakes.</p> <p>Level 3 (5–6 marks) Demonstrates thorough knowledge and understanding of hazards generated by earthquakes.</p> <p>Level 2 (3–4 marks) Demonstrates reasonable knowledge and understanding of hazards generated by earthquakes.</p> <p>Level 1 (1–2 marks) Demonstrates basic knowledge and understanding of hazards generated by earthquakes.</p> <p>0 marks No response or no response worthy of credit.</p> <p>AO2 Level 4 (19–24 marks) Demonstrates comprehensive application of knowledge and understanding to provide a clear, developed and convincing analysis that is fully accurate of how earthquakes generate hazards at a variety of scales.</p> <p>Demonstrates comprehensive application of knowledge and understanding to provide a detailed and substantiated evaluation that offers secure judgements leading to rational conclusions that are evidence based of the degree to which earthquakes generate only local hazards.</p>	<p>33 AO1 x9 AO2 x24</p>	<p>Indicative content AO1 – 9 marks Knowledge and understanding of hazards generated by earthquakes could potentially include:</p> <ul style="list-style-type: none"> • hazards generated by earthquakes such as ground shaking, surface faulting, liquefaction, mass movements such as landslides, avalanches, tsunamis, flooding • earthquake characteristics such as shallow-focus and deep-focus earthquakes • assessing earthquake magnitude and the geographical location of the earthquake. <p>AO2 – 24 marks Application of knowledge and understanding to analyse and evaluate whether earthquakes generate only local hazards, could potentially include:</p> <ul style="list-style-type: none"> • might suggest that earthquakes do only generate effects which are locally hazardous. For example, liquefaction in the Kobe earthquake of 1995 was largely restricted to the port (reclaimed land) • reference to the magnitude of the earthquake, with the assertion that the more energy released, the more wide spread the hazards posed by an earthquake event are likely to be • earthquakes of not particularly high magnitude in regions such as the Himalayas can generate many landslide hazards as the area is naturally prone to mass movement due to the steep relief • high magnitude events such as the Boxing Day earthquake (2004) and subsequent tsunami generated both local and more distant hazards which spread right round the Indian Ocean. Hazards were felt most intensely locally, Aceh province, Indonesia,

	<p>Relevant concepts are authoritatively discussed.</p> <p>Level 3 (13–18 marks) Demonstrates thorough application of knowledge and understanding to provide a clear and developed analysis that shows accuracy of how earthquakes generate hazards at a variety of scales.</p> <p>Demonstrates thorough application of knowledge and understanding to provide a detailed evaluation that offers generally secure judgements, with some link between rational conclusions of the degree to which earthquakes generate only local hazards.</p> <p>Relevant concepts are discussed but this may lack some authority.</p> <p>Level 2 (7–12 marks) Demonstrates reasonable application of knowledge and understanding to provide a sound analysis that shows some accuracy of how earthquakes generate hazards at a variety of scales.</p> <p>Demonstrates reasonable application of knowledge and understanding to provide a sound evaluation that offers generalised judgements and conclusions, with limited use of evidence of the degree to which earthquakes generate only local hazards.</p> <p>Concepts are discussed but their use lacks precision.</p> <p>Level 1 (1–6 marks) Demonstrates basic application of knowledge and understanding to provide a simple analysis that shows limited accuracy of how earthquakes generate hazards at a variety of</p>	<p>but nevertheless people lost their lives, and there was serious damage caused hundreds of kilometres away</p> <ul style="list-style-type: none"> • some earthquake hazards have global repercussions, especially when viewed from social, economic and political perspectives e.g. Kobe earthquake (1995) had global economic impacts as the port is a key transit location in the global trading system; the Haiti earthquake (2010) had social impacts around the world in terms of the international relief operation • the differing influence of factors such as depth of focus, rock type, relief, and proximity to epicentre, on the relationship between earthquake events and scale of the hazards they generate.
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	<p>scales.</p> <p>Demonstrates basic application of knowledge and understanding to provide an un-supported evaluation that offers simple conclusions of the degree to which earthquakes generate only local hazards.</p> <p>Concepts are not discussed or are so inaccurately.</p> <p>0 marks No response or no response worthy of credit.</p> <p>Quality of extended response</p> <p>Level 4 There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.</p> <p>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.</p> <p>Level 2 The information has some relevance and is presented with limited structure. The information is supported by limited evidence.</p> <p>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.</p>		
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Assessment Objectives (AO) grid

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

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