EDUQAS A LEVEL GEOGRAPHY

Revision Questions and Mark Schemes



The following booklet provides extra revision questions for use with your students as you prepare for the upcoming examinations. The sample of questions for each Component are accompanied by detailed mark schemes.

These questions are indicative of what students can expect in the final assessment and the use of command words within the document reflects the rationale set-out in the 'Assessment Guidance for Teachers' PowerPoint presentation available on the resources website.

http://resources.eduqas.co.uk/

Content:

Component	Page
C1	3
C2	16
C3	28

Revision Questions and Mark Schemes: Component 1

Section A: Changing Landscapes

Either: Coastal Landscapes

Figure 1: Satellite image of Cap Ferret and Arcachon Bay, Aquitaine, France



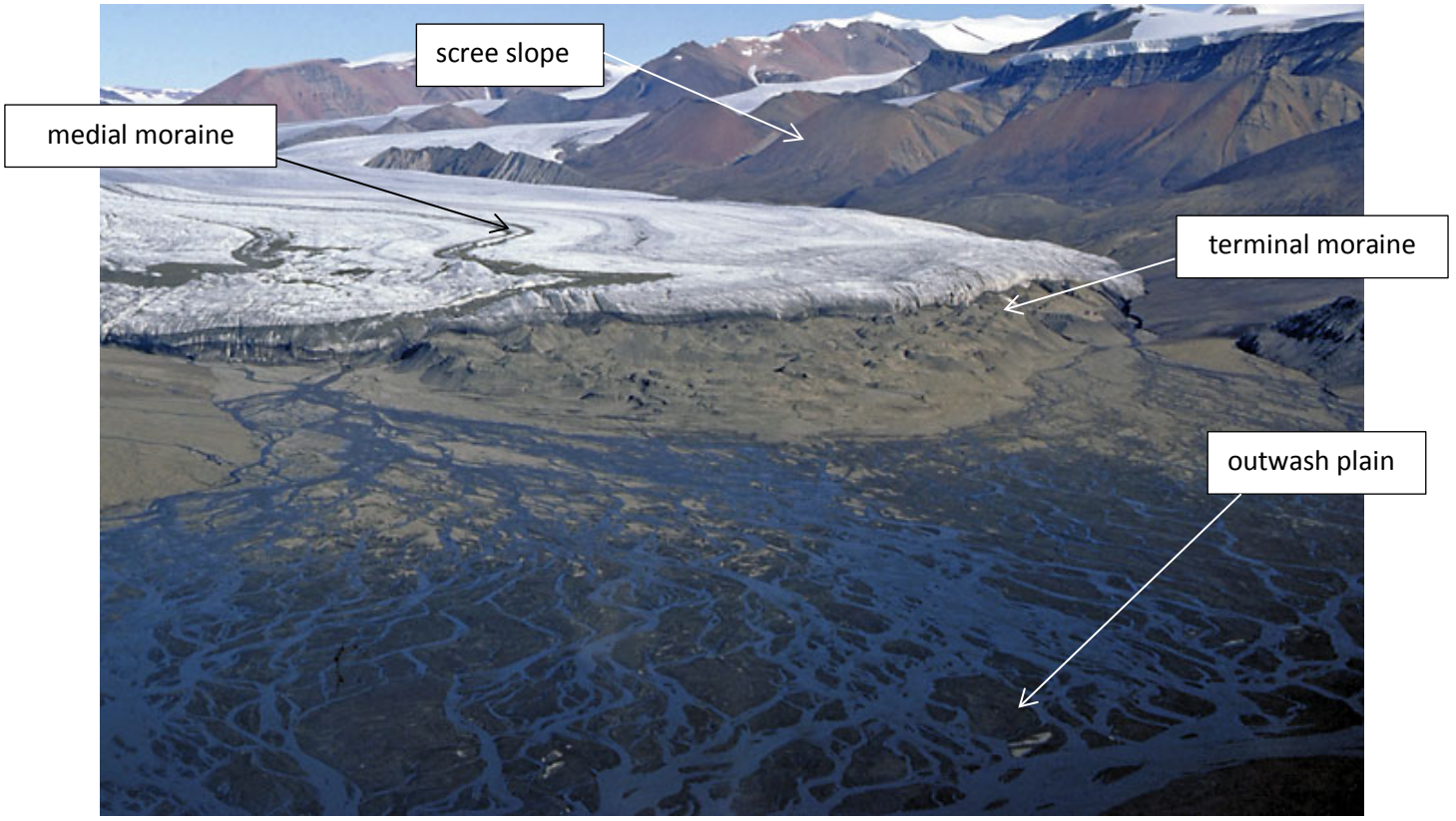
Source: www.climatetechwiki.org

1. Use **Figure 1** to suggest how this part of the Aquitaine coast operates as a system.
[AO3 - 5]

3. Assess the positive and negative impacts of coastal processes on human activity.
[AO1 (10) + AO2 (5) = 15]

Or: Glaciated Landscapes

Figure 2: Outwash plain in front of Thompson Glacier, Axel Heiberg Island, Canadian Arctic



Source: www.swisseduc.ch

5. Use **Figure 2** to suggest how the Thompson Glacier operates as a system.

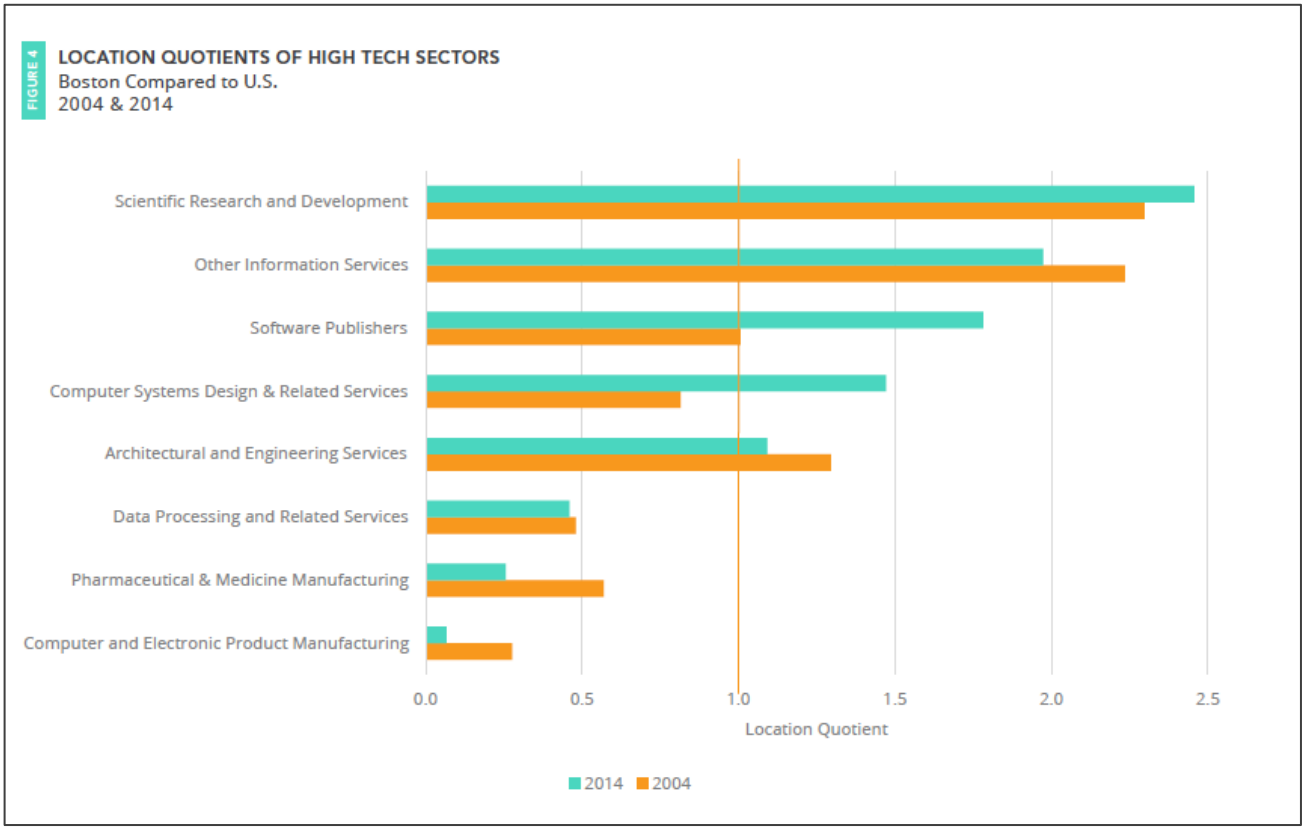
[AO3 - 5]

7. Compare the characteristics and formation of highland and lowland glacial landscapes.

[AO1 (10) + AO2 (5) = 15]

Section B: Changing Places

Figure 3: Changing location quotients of high technology sectors in Boston, USA 2004 - 2014



Source: US Bureau of Labor Statistics

9. a) Use **Figure 3** to describe changes in the concentration of high technology sectors in Boston from 2004 to 2014.

[AO3 - 5]

b) Outline how quaternary industry clusters may have an impact on the population and global connectivity of one or more places.

[AO1 - 8]

11. Examine how deindustrialisation can have varied consequences for urban places.

[AO1 (10) + AO2 (5) = 15]

1. Use Figure 1 to suggest how this part of the Aquitaine coast operates as a system. Content:1.1.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					5		**5**

Indicative content
The satellite image contains a number of features that are part of a suite of depositional landforms. The main ones are a spit, offshore bar, dune system, beach and estuary. The photograph can be used to provide evidence of how these can be linked together with a systems approach that includes inputs, stores, transfers and outputs. This could include:

- the offshore bar of Bank Arguin [store] is supplied by material form the Cap Ferray spit [input] by waves [transfer]
- the dunes at Dune Pilat [store] are provided with sand from Bank Arguin [input] by waves [transfer] and wind [transfer]
- the offshore bar of Bank Arguin [store] is provide with sediment from the Arcachon estuary [input] by currents and rivers [transfer]

Band	Marks	Indicative Content
3	**4-5 marks**	Clear and developed description of the operation of the Aquitaine coast as a system. Wide use of the resource as a source of data to support the answer.
2	**2-3 marks**	Partial description of the operation of the Aquitaine coast as a system. Partial use of the resource as a source of data to support the answer.
1	**1 mark**	Limited description of the operation of the Aquitaine coast as a system. Limited use of the resource as a source of data to support the answer.
	0 marks	Response not creditworthy or not attempted.

3. Assess the positive and negative impacts of coastal processes on human activity. Content: 1.1.9	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	10			5			**15**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1
This encompasses the knowledge and understanding of impacts of coastal processes on human activity. Content will depend upon the issues addressed and the case study material used but may include:

Negative consequences

- impacts of erosion on settlements and housing
- impacts of erosion on economy – destruction of farmland, insurance costs, threats to sectors of industry, costs of rebuilding
- impacts of erosion on transport – destruction of road, rail systems
- impacts on society – erosion of beaches and impacts on leisure
- impacts of deposition – blocking harbours

Positive consequences

- provision of coastal landscapes that are attractive for tourism
- provision of protection against coastal flooding – dune systems
- provision of raw materials for construction industry
- provision of natural harbours

AO2
AO2.1c content encompasses the application of knowledge and understanding to evaluate the positive and negative impacts of coastal processes on human activity. A conclusion may be drawn in the context of the impacts discussed but a conlcusion is not necessary in order to reach the top of Band 3. Approaches may include:

- examination of the balance between positive and negative in a located place
- examination of the type and magnitude of impacts between places
- examination of the perspectives on impacts

Award the marks as follows:		
	AO1 (10 marks)	**AO2.1c (5 marks)**
Band	*Demonstrates knowledge and understanding of the positive and negative impacts of coastal processes on human activity.*	*Applies knowledge and understanding to assess* the *positive and negative impacts of coastal processes on human activity.*
3	**7-10 marks** Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of a range of impacts of coastal processes on human activity Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	**4-5 marks** Applies knowledge and understanding to construct well-developed assessment that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent assessment of the impacts of coastal processes on human activity.
2	**4-6 marks** Demonstrates some accurate knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of a range of impacts of coastal processes on human activity. Demonstrates partial knowledge and understanding through the use of appropriate, accurate and well-developed examples. Generalised sketches / diagrams may be used and should be credited.	**2-3 marks** Applies knowledge and understanding to construct partial assessment that is partially supported by evidence. Applies knowledge and understanding to produce a partial assessment of the impacts of coastal processes on human activity.
1	**1-3 marks** Demonstrates limited geographical knowledge and understanding relevant to the question. Demonstrates limited knowledge and understanding of a range of impacts of coastal processes on human activity. Demonstrates limited knowledge and understanding through the use of limited examples, which are un-developed. Basic sketches / diagrams may be seen and should be credited.	**1 mark** Applies knowledge and understanding to construct a limited assessment. Applies knowledge and understanding to produce a limited assessment of the impacts of coastal processes on human activity.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

5. Use **Figure 2** to suggest how the Thompson Glacier operates as a system. Content: 1.2.1	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					5		**5**

Indicative content

The aerial photograph contains a number of features that are part of a glacial system. The photograph can be used to provide evidence of how these can be linked together with a systems approach that includes inputs, stores, transfers and outputs. This could include:

- the scree slopes provide sediment to the glacier [input] that is transported as medial moraines [transfer] which is deposited as a terminal moraine [output or store]
- sediment transported as fluvio-glacial streams [input] is transported by streams at the front of the glacier [transport] and deposited to form an outwash plain [output or store]

Band	Marks	
3	**4-5 marks**	Clear and developed description of the operation of the Thompson Glacier as a system. Wide use of the resource as a source of data to support the answer.
2	**2-3 marks**	Partial description of the changes in the concentration of the Thompson Glacier as a system. Partial use of the resource as a source of data to support the answer.
1	**1 mark**	Limited description of the changes in the concentration of the Thompson Glacier as a system. Limited use of the resource as a source of data to support the answer.
	0 marks	Response not creditworthy or not attempted.

7. Compare the characteristics and formation of highland and lowland glacial landscapes. Content: 1.2.7	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	10			5			**15**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1
This encompasses the knowledge and understanding of the characteristics and formation of highland and lowland glacial landscapes. Do not expect all landforms associated with highland and lowland glaciation to be covered as candidates may select individual landforms to illustrate a point. Content will depend upon the issues addressed and the case study material used but may include:

- knowledge of landscape is a suite of landforms
- highland glacial mainly erosional – cwms, u-shape valleys
- lowland glacial mainly depositional – drumlins, till plains, fluvio-glacial landforms
- lowland glacial erosion – knock and lochan
- magnitude of landforms larger in highlands
- lowland landscape the result of slower moving/stagnant ice
- in UK upland is fresher and less subdued by other processes – dissections by rivers and periglacial

AO2
Candidates demonstrate the application of knowledge and understanding to compare highland and lowland glaciation. A conclusion may be drawn in the context of the landforms discussed but a conlcusion is not necessary in order to reach the top of Band 3. This comparison may take the form of:

- comparison of a series of landforms to highlight differences in characteristics and processes of formation
- recognition that there are similarities
- comparison of locations

Award the marks as follows:		
	AO1 (10 marks)	**AO2.1c (5 marks)**
Band	*Demonstrates knowledge and understanding of highland and lowland glaciation.*	*Applies knowledge and understanding to compare features of highland and lowland glaciation.*
3	**7-10 marks** Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of the characteristics and formation of landscapes of highland and lowland glaciation. Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	**4-5 marks** Applies knowledge and understanding to construct well-developed assessment that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent comparison of the characteristics and formation of landscapes of highland and lowland glaciation.
2	**4-6 marks** Demonstrates some accurate knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of the characteristics and formation of landscapes of highland and lowland glaciation. Demonstrates partial knowledge and understanding through the use of appropriate, accurate and well-developed examples. Generalised sketches / diagrams may be used and should be credited.	**2-3 marks** Applies knowledge and understanding to construct partial assessment that is partially supported by evidence. Applies knowledge and understanding to produce a partial comparison of the characteristics and formation of landscapes of highland and lowland glaciation.
1	**1-3 marks** Demonstrates limited geographical knowledge and understanding relevant to the question. Demonstrates limited knowledge and understanding of the characteristics and formation of landscapes of highland and lowland glaciation. Demonstrates limited knowledge and understanding through the use of limited examples, which are un-developed. Basic sketches / diagrams may be seen and should be credited.	**1 mark** Applies knowledge and understanding to construct limited assessment. Applies knowledge and understanding to produce a limited comparison of the characteristics and formation of landscapes of highland and lowland glaciation.
0	**0 marks** Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

9. a) Use **Figure 3** to describe changes in the concentration of high technology sectors in Boston from 2004 to 2014. Content: 1.3.6	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					5		**5**

Indicative content

Possible changes:

- many sectors have decreased in their concentration
- software publishers highest increase
- pharmaceutical and medicine manufacture has the greatest absolute decrease
- Computer and electronic product manufacturing has the greatest proportional decrease
- majority now above USA average concentration

Band	Marks	
3	**4-5 marks**	Clear and developed description of the changes in the concentration of high technology sectors. Wide use of the resource as a source of data to support the description.
2	**2-3 marks**	Partial description of the changes in the concentration of high technology sectors. Partial use of the resource as a source of data to support the description.
1	**1 mark**	Limited description of the changes in the concentration of high technology sectors. Limited use of the resource as a source of data to support the description.
	0 marks	Response not creditworthy or not attempted.

9. b) Outline how quaternary industry clusters may have an impact on the population and global connectivity of one or more places. Content:1.3.6	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
Award one mark per valid point	8						**8**

Indicative content

AO1 content should examine the way in which quaternary clusters influence the two identified characteristics. Population may address features such as the size, skills/qualification characteristics and wealth. Global connectivity may include trade links to international markets, migration of skilled workers, improved digital connectivity. Content will depend upon examples used but may include:

- growth of population as population migrates from other regions of the country
- improved skills and qualifications as institutes of higher education are associated with these clusters
- improved skills via training whist in employment
- clusters provide well paid employment which increases wealth of the population
- clusters connected to other countries via trade or intra company linkage
- clusters are linked to other countries via migration of skilled labour
- digital connectivity increases

Band	**Marks**	
3	**4-5 marks**	Detailed and accurate knowledge and understanding of the impacts of quaternary industry clusters on population and global connectivity. Uses appropriate accurate and well developed examples. Well annotated sketches/diagrams/maps may be used.
2	**2-3 marks**	Partial knowledge and understanding of the impacts of quaternary industry clusters on population and global connectivity. Uses appropriate and partially developed examples. Generalised sketches/diagrams/maps may be used.
1	**1 mark**	Limited knowledge and understanding of the impacts of quaternary industry clusters on population and global connectivity. Uses limited examples. Basic sketches/diagrams/maps may be used.
	0 marks	Response not creditworthy or not attempted.

11. Examine how deindustrialisation can have varied consequences for urban places. Content: 1.3.4	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	10			5			**15**

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1
This encompasses the knowledge and understanding of the consequences of deindustrialisation in urban places. Content will depend upon the issues addressed and the case study material used but may include:

Negative consequences

- impacts on the economic character of the place – factory closure, loss of jobs, closure of component/connected industries, loss of investment as reputation of area declines, decline in skills of workforce/productivity
- impacts on the demography of the place – outmigration, changing population structure [ageing],
- impacts on society – depression, crime
- impacts on environment - dereliction, vandalism

Positive consequences

- improvements via investment to overcome deindustrialisation – new infrastructure, improved industrial buildings
- changing economic structure with new industries arriving in redeveloped places
- improved environment as older industries close

AO2
Candidates demonstrate the application of knowledge and understanding to examine variations in the consequences. A conclusion may be drawn in the context of the consequences discussed but a conlcusion is not necessary in order to reach the top of Band 3. Approaches may include:

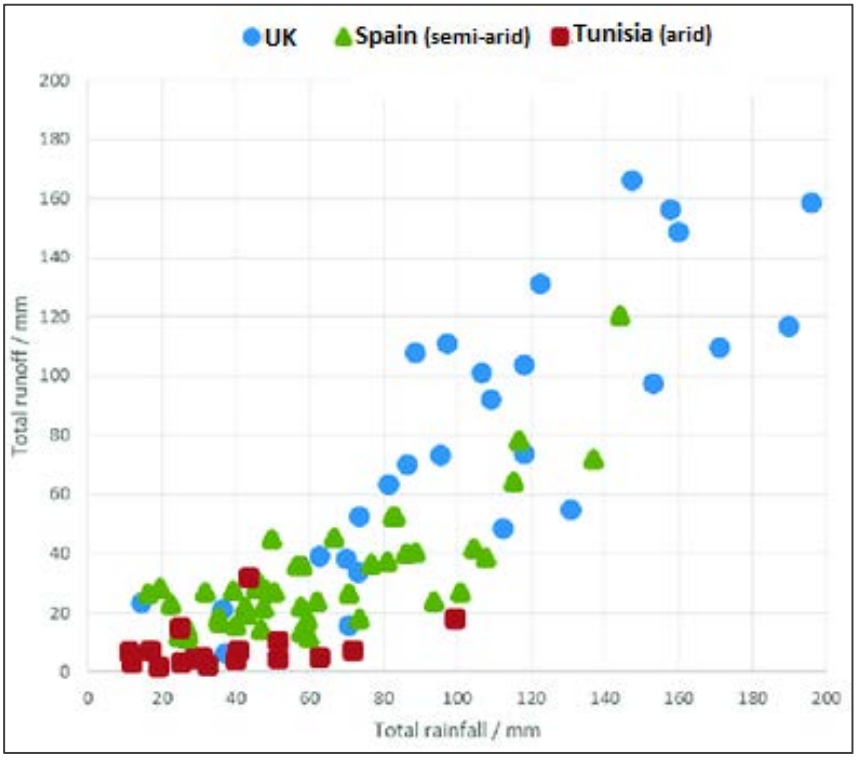
- examination of the balance between positive and negative in a located urban place
- examination of the type and magnitude consequences between places
- examination of the group/individual perspectives of the consequences
- examination of how consequences may vary over time

Award the marks as follows:		
	AO1 (10 marks)	**AO2.1c (5 marks)**
Band	*Demonstrates knowledge and understanding of the consequences of deindustrialisation.*	*Applies knowledge and understanding to examine the varied consequences of deindustrialisation.*
3	**7-10 marks** Demonstrates detailed and accurate knowledge and understanding that is relevant to the question. Demonstrates detailed and accurate knowledge and understanding of a range of consequences. Demonstrates detailed and accurate knowledge and understanding through the use of appropriate, accurate and well-developed examples. Well annotated sketches / diagrams may be used and should be credited.	**4-5 marks** Applies knowledge and understanding to construct a well-developed examination that is supported by evidence. Applies knowledge and understanding to produce a thorough and coherent examination of the variation in consequences of deindustrialisation.
2	**4-6 marks** Demonstrates some accurate knowledge and understanding that is relevant to the question. Demonstrates partial knowledge and understanding of a range of consequences. Demonstrates partial knowledge and understanding through the use of appropriate, accurate and well-developed examples. Generalised sketches / diagrams may be used and should be credited.	**2-3 marks** Applies knowledge and understanding to construct a partial examination that is partially supported by evidence. Applies knowledge and understanding to produce a partial examination of the variation in consequences of deindustrialisation.
1	**1-3 marks** Demonstrates limited geographical knowledge and understanding relevant to the question. Demonstrates limited knowledge and understanding of a range of consequences. Demonstrates limited knowledge and understanding through the use of limited examples, which are un-developed. Basic sketches / diagrams may be seen and should be credited.	**1 mark** Applies knowledge and understanding to construct a limited examination. Applies knowledge and understanding to produce a limited examination of the variation in consequences of deindustrialisation.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

Revision Questions and Mark Schemes: Component 2

Section A: Global Systems – Water and Carbon Cycles

Figure 1: A scatter plot showing the relationship between rainfall and runoff amounts for three drainage basins located in different climatic zones



Source: www.reseacrhgate.net

1. (a) Compare the relationships for the drainage basins in Spain and Tunisia. shown in **Figure 1**.

[AO3 - 5]

(b) Explain **one** possible reason why higher rainfall does not always correlate with higher runoff in the UK drainage basin shown in **Figure 1.**

[AO2 - 5]

3. Discuss the severity of the impact of drought on different water and carbon stores.

[AO1 (10) + AO2 (10) = 20]

Section B: Global Governance: Change and Challenges

7. 'National government policies are more important than international agreements for the management of migration and ocean issues.' Discuss this statement.

[AO1 (10) + AO2 (10) = 20]

Section C: 21st Century Challenges

In your answer, you should use Figures 5, 6, 7 and 8 and apply your knowledge and understanding from across the whole specification.

9. 'Physical processes can cause place identity to change rapidly whereas human activity always brings slower changes.' Discuss this statement. [AO3 (10) + AO1 (8) + AO2 (12) = 30]

Figure 5: Percentage of second homes in the top 10 local authorities, based on council tax rates, in 2006

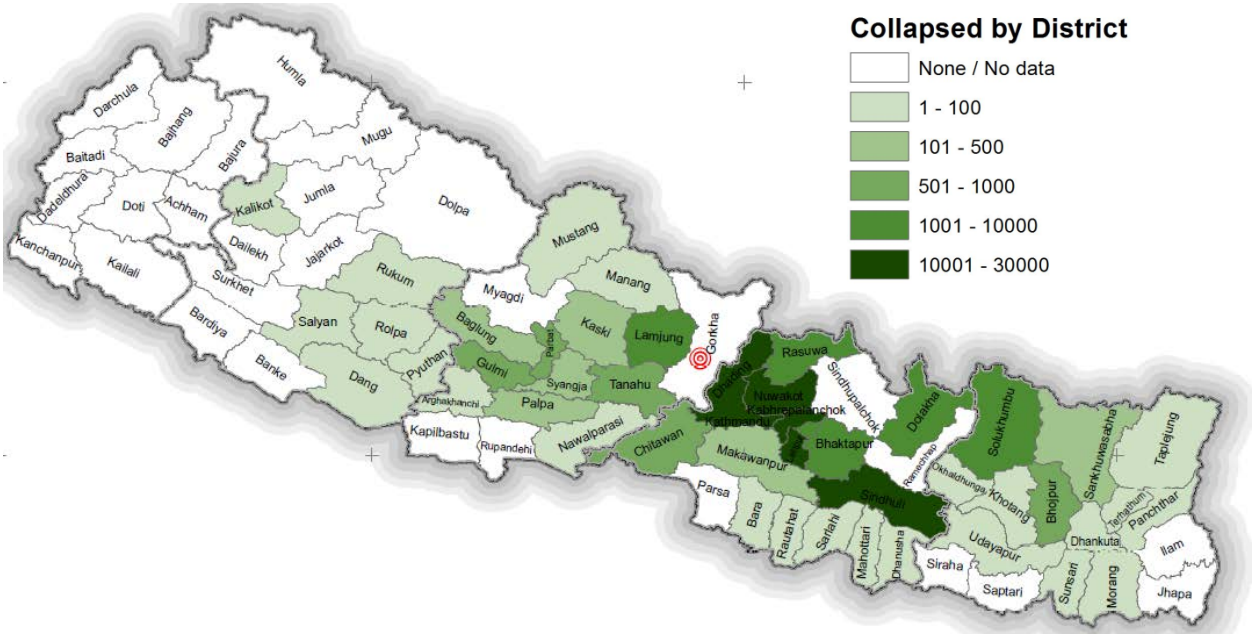
Rank	Authority	County	Second Homes (%)
1	City of London	Inner London	26.1
2	Isles of Scilly	Cornwall and the Isles of Scilly	19.5
3	South Hams	Devon	10.1
4	North Cornwall	Cornwall and the Isles of Scilly	9.7
5	North Norfolk	Norfolk	9.5
6	Berwick upon-Tweed	Northumberland	9.2
7	Penwith	Cornwall and the Isles of Scilly	8.0
8	Kensington & Chelsea	Inner London	7.8
9	Westminster	Inner London	7.8
10	South Lakeland	Cumbria	7.4

Figure 6: The recently built Rohingya refugee camps in Ukhia and Teknaf in Cox's Bazar have damaged the biodiversity of the area, conservationists say.



Source: http://en.prothomalo.com

Figure 7: Collapsed buildings in the Nepal earthquake 2015



Source: maps.mapaction.org

Figure 8: Landslide in glacial sediments, Puget Sound



Source: www.seattletimes.com

1. a) Compare the relationships for the drainage basins in Spain and Tunisia shown in **Figure 1**. Skills: 2.14	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
					5		**5**

Indicative content

Likely AO3 content includes an explicit comparison of the relationships

- Both positive
- Stronger correlation for Spain (may quote data)
- Tunisia relationship is less clear
- Non-linear relationships in both cases (for values lower than 80-100mm rain)

Credit any other valid points. Do not credit any attempted explanation.

Marking guidance

Near the upper end, answers that score well will explicitly compare essential features of the two relationships.

Answers near the lower end may provide a limited list of simplistic points only.

Award the marks as follows:

Band	Marks	
3	**4-5**	Well-developed comparison of the relationships. Wide use of the resource to support comparison.
2	**2-3**	Partial comparison of the relationships. Some use of the resource to support comparison.
1	**1**	Limited statements to compare the relationships. Little or no use of the resource to support comparison.
	0	Response not creditworthy or not attempted.

1. b) Explain **one** possible reason why higher rainfall does not always correlate with higher runoff in the UK drainage basin shown in **Figure 1**. Content: 2.1.2	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
		5					**5**

Indicative content

Likely AO2 content includes explaining **ONE** reason in detail:

- Interception storage (for low to medium amounts of rainfall, there may no runoff because all water stored; once a threshold rainfall level reached however, interception store is exhausted and runoff begins; the result is a non-linear relationship / weak correlation)
- Seasonal changes in vegetation cover (or other factors/processes/variables e.g. trampling and seasonal tourism) and thus interception storage

Credit any other valid points.

Marking guidance

Near the upper end, answers that score well may provide an explanation that includes in-depth process details and good use of terminology.

Answers near the lower end may have very little knowledge and understanding, and suggest simplistic points only.

Award the marks as follows:

Band	Marks	
3	**4-5**	One well-developed explanation of a valid reason / factor. Developed knowledge and understanding of the relationship shown in **Figure 1**.
2	**2-3**	One partial explanation of a valid reason / factor. Some knowledge and understanding of the relationship shown in **Figure 1**.
1	**1**	Limited explanation. Fragmented or no applied knowledge.
	0	Response not creditworthy or not attempted.

3. Discuss the severity of the impact of drought on different water and carbon stores. Content: 2.1.5; 2.1.9-2.1.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	10			10			**20**

Indicative Content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1
Candidates will provide a description and explanation of drought (water cycle deficit) on a range of stores. These may include:

- Lakes, rivers and aquifers
- Vegetation both water and carbon storage)
- Peatland (drying out, decomposition and carbon release) and soil (water and carbon store)
- Examples of actual drought/water deficit

AO2
Candidates demonstrate application of knowledge and understanding through synthesis and evaluation. This may include:

- Evaluation of the severity (some changes may be longer lasting)
- Evaluation of the permanency of lost stores (e.g. soil erosion following vegetation loss)
- Reflection on 'direction' of impact (some stores could increase e.g. atmosphere)
- Refection on idea of thresholds being crossed / irreversible change

Marking Guidance

Near the upper end, answers that score highly will show application of knowledge and understanding by explaining and discussing complex ideas, synthesising information, coming to rational conclusions and thinking critically about the severity of impacts.

Award the marks as follows:		
	AO1 (10 marks)	**AO2.1c (10 marks)**
Band	*Description and explanation of impacts of drought on stores.*	*An evaluation of the severity of the impacts of drought on stores.*
3	**7-10 marks** Demonstrates detailed and accurate knowledge and understanding of all elements of the question. Makes use of appropriate and well-developed examples and may include well-annotated diagram(s).	**7-10 marks** Applies knowledge and understanding to produce a coherent, thorough and sustained evaluation. Applies knowledge and understanding of water and carbon cycles in a well-balanced way. Balanced coverage of the main issues leading to a substantiated conclusion.
2	**4-6 marks** Demonstrates accurate knowledge and understanding of most elements of the question. Makes some use of examples and may include simple diagram(s).	**4-6 marks** Applies knowledge and understanding to produce a coherent but partial evaluation. Applies knowledge and understanding of water and carbon cycles in a partially-balanced way.
1	**1-3 marks** Demonstrates limited knowledge and understanding of some element of the question. Makes limited or no use of examples and may include a simple diagram.	**1-3 marks** Applies knowledge and understanding to produce a limited evaluation. Applies knowledge and understanding of water and carbon cycles in an unbalanced way (one may be absent).
	0 marks Response not creditworthy or not attempted	**0 marks** Response not creditworthy or not attempted

7. 'National government policies are more important than international agreements for the management of migration and ocean issues.' Discuss this statement. Content: 2.2.3-2.2.5; 2.2.6-2.2.10	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	10			10			**20**

Indicative Content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

AO1 content encompasses knowledge and understanding of the management of migration and oceans issues

- Refugee crisis and role of some governments in granting asylum (and other governments in creating conflict people are fleeing from)
- National government policies in relation to migration / free movement
- Government policies for ocean waste, plastics
- Examples of global agreements e.g. UNCLOS and UNHCR

AO2

Candidates demonstrate application of knowledge and understanding through an evaluation of the importance of governments and agreements for successful management.

- Evaluating the extent to which agreements are needed and actually adhered to
- Evaluating the ability of governments/states to take real control of issues (e.g. Brexit)
- Reflecting on need for international frameworks for governments to work with (both are important)
- Reflecting on power/influence of certain governments e.g. USA, China

Marking Guidance

Near the upper end, answers that score highly at will show application of knowledge and understanding by evaluating detailed and possibly interlinked challenges, synthesising information, and arriving at a substantiated conclusion.

Award the marks as follows:		
	AO1 (10 marks)	**AO2.1c (10 marks)**
Band	*Description and explanation of migration and oceans issues and management.*	*Evaluation of the importance of national government policies and global agreements.*
3	**7-10 marks** Demonstrates detailed and accurate knowledge and understanding of all elements of the question. Makes use of appropriate and well-developed examples.	**7-10 marks** Applies knowledge and understanding to produce a coherent, thorough and sustained evaluation. Applies knowledge and understanding of migration and oceans governance in a well-balanced way. Balanced coverage of the main issues leading to a substantiated conclusion.
2	**4-6 marks** Demonstrates accurate knowledge and understanding of most elements of the question. Makes some use of examples.	**4-6 marks** Applies knowledge and understanding to produce a coherent but partial evaluation. Applies knowledge and understanding of migration and oceans governance in a partially-balanced way.
1	**1-3 marks** Demonstrates limited knowledge and understanding of some element of the question. Makes limited or no use of examples.	**1-3 marks** Applies knowledge and understanding to produce a limited evaluation. Applies knowledge and understanding of migration and oceans governance in an unbalanced way (one may be absent).
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

9. 'Physical processes can cause place identity to change rapidly whereas human activity always brings slower changes.' Discuss this statement.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3		**Total**
	8			12	10		**30**

Indicative Content

Within the answer to question 9, candidates should use the maps in **Figures 5, 6, 7 and 8** and apply their knowledge and understanding from across the whole specification in order to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.
The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO3 may include:

- Analysis of differences in the number of second homes up to the year 2006 that are shown in the local authorities in Figure 5. This resource allows candidates to comment upon the development of second homes in different parts of the UK. Some answers may recognise that there are both urban and rural local authorities. The impact of second homes could be developed and there could be an analysis of the variable change that they bring to places. There could be discussion of how change caused by human activity can be variable – the rate of change in the City of London could be compared with South Lakeland
- Analysis of recent changes caused by refugee camps can be seen in Figure 6. The rapid changes that have been the result of geopolitical forces can be seen in the photo. Comment can be made on the changing biodiversity that is the result of the development of the camps – this has been recent and the photo intimates the amount of change (foreground and background). The impacts on soil erosion and drainage on the identity of the place may also be addressed in the context of physical change. Comment may also be focused on the rapid growth of poor housing and its consequences for this part of Cox's Bazar
- Analysis of the impact of earthquakes may be discussed using Figure 7. The rapid nature of the destruction of places may be addressed. The resource demonstrates that rapid place change is variable with distance from the epicentre. The magnitude of change is shown in the key. There may be discussion of the nature of change caused by earthquakes that goes beyond the collapse of buildings – the impact of these on the demographic, social and economic characteristics of place may be explored
- Analysis of the impact of geomorphic processes shown in Figure 8 – a coastal landslide in glacial sediments. Comments may be made about the rapid speed of the landslide that may cause the physical identity of the place to change quickly as it changes its spatial extent. Other comments may refer to the change in identity from a place seen as an idyllic settlement to one with connotations of danger and loss of investment. Some comment may refer to changing identity of the coastal zone – beach to landslide toe
- Synthesis of the information identified in the resources. This may take the form of comparisons that may link to aspects that are explored as AO2 discussion. Figures 6-8 may be used as evidence of the rapid change in the identity of place caused by physical processes. The link between physical and human activity could be addressed using Figure 6. Comments associated with scale could be made making reference to Figures 6 and 8 in comparison to Figure 7. Rural/urban contrasts could be highlighted with reference to Figure 5 and Figure 7

AO1
AO1 content includes prior knowledge and understanding of the processes and environments in Figures 5-8, or other relevant material studied as part of the course. This may include:

- Reference to the rate of change to place identity with reference to Changing Places. Comment could be made on the speed of change to place identity caused by deindustrialisation in urban areas or the speed in which the identity of CBDs has altered. This could be contrasted with slower pace of change in rural settlements
- Reference to the rate of change to place identity with reference to climatic hazards. Changes to the place identity of settlements impacted by extreme weather – social and economic changes to identity
- Reference to the slow rate of change that take place identity in response to physical processes that lead to succession
- Reference to both rapid and slow changes to place identity that take place in response to international migration
- Reference to the role of human activity in the slow and rapid changes to place identity in the carbon and water cycles e.g. the impacts of deforestation and climate change
- Reference to the rapid speed of change to place identity as a result of tectonic activity.
- Reference to the speed of change to place identity in a regional context – the slow onset of desertification, rapid changes to urban areas as a result of policies to encourage sustainability

AO2
AO2 requires candidates demonstrate application of knowledge and understanding through critical discussion of the extent to which human or physical processes influence the speed of change of place identity. Responses may include:

- Discussion of the scale of places that are undergoing changing place identity
- Discussion of magnitude of the processes that are operating
- Discussion of spatial variations in human and physical processes and their link to the speed of change to place identity
- Discussion of the relative speed of change to place identity with reference to environmental, demographic, economic and social change
- Discussion of variability in the speed of changes to place identity – comparisons of rate may change over time
- Reflection on perspectives of speed of change – some groups may see both physical and human changes as rapid e.g. some generations regard human causes of changes to place identity in rural settlements as just as rapid as physical

Marking Guidance

Credit any other valid points.

The question requires candidates' progress beyond explaining changes and possible prevention measures. At the upper end, answers that score highly will show application of knowledge and understanding by *critically discussing identity changes over time*, synthesising information, and coming to rational and substantiated conclusions which draw across the Specification.

Award the marks as follows:			
	AO1 [8 marks]	**AO2.1c [12 marks]**	**AO3 [10 marks]**
Band	*Knowledge of the causes of place identity changes.*	*Critical discussion of the rate of change (slower/rapid).*	*Analysis of causes and changes in Figures 5-8; extended writing skills.*
3	**7-8 marks** Demonstrates detailed and accurate knowledge and understanding of all elements of the question. Makes use of appropriate and well-developed examples and may include well-annotated diagram(s).	**9-12 marks** Applies knowledge and understanding to produce a coherent, thorough and sustained evaluation. Applies knowledge and understanding of Specification themes in a broad and well-balanced way.	**8-10 marks** Well-developed analysis of Figures 5-8 with sustained and detailed use of data. Well-constructed, coherent and logical arguments and substantiated conclusions.
2	**4-6 marks** Demonstrates accurate knowledge and understanding of most elements of the question. Makes some use of examples and may include simple diagram(s).	**5-8 marks** Applies knowledge and understanding to produce a coherent but partial evaluation. Applies knowledge and understanding of Specification themes in a narrower and partially-balanced way.	**4-7 marks** Partial analysis of Figures 5-8 with some detailed use of data. Partial arguments and conclusions have been attempted.
1	**1-3 marks** Demonstrates limited knowledge and understanding of some element of the question. Makes limited or no use of examples and may include a simple diagram.	**1-4 marks** Applies knowledge and understanding to produce a limited evaluation. Applies limited knowledge and understanding of Specification themes in an unbalanced way.	**1-3 marks** Limited analysis of Figures 5-8 with some limited use of data. Limited arguments and conclusions, if any.
	0 marks Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.	**0 marks** Response not creditworthy or not attempted.

Revision Questions and Mark Schemes: Component 3

Section A

Theme 1: Tectonic Hazards

'Of all the hazards resulting from volcanic processes, pyroclastic flows present the greatest risk'. To what extent do you agree?

[38 marks]

Section B

Theme 2: Ecosystems

'Tropical rainforests are under greater threat than any other ecosystem'. To what extent do you agree?

[45 marks]

Theme 3: Economic Growth and Challenge: India or China or Development in an African Context

India

'Climate variability is a major constraint on human activity in India.' Discuss.

[45 marks]

China

'Climate variability is a major constraint on human activity in China.' Discuss.

[45 marks]

Development in an African Context

'Isolating the main cause of desertification is problematic'. Discuss.

[45 marks]

Theme 4: Energy Challenges and Dilemmas

'Policies for demand reduction are essential in order to meet the demand for energy sustainably.' Discuss.

[45 marks]

Theme 5: Weather and Climate

'The vulnerability of populations to weather and climatic hazards is increasing'. Discuss.

[45 marks]

(Please use the generic marking grids in the Specimen Assessment Materials to award a mark for each AO)

Section A: Theme 1: Tectonic Hazards

1. 'Of all the hazards resulting from volcanic processes, pyroclastic flows present the greatest risk'. To what extent do you agree?

[38 marks]
AO1 [14] AO2.1c [20] AO3.3 [4]

Focus: 3.1.2

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

Likely themes and specialised concepts include:

AO1

Knowledge and understanding of volcanic hazards could include:

- Pyroclastic flows consist of hot, dense mixtures of ash, rock and gas that can move downslope at speeds of up to 100 km/h for distances of up to 10km (causality / risk)
- Lava flows are streams of molten rock that pour or ooze from an erupting vent. Lava is erupted during either nonexplosive activity or explosive lava fountains (causality / risk)
- Ash falls comprise small, jagged pieces of rock, minerals and volcanic glass the size of sand and silt (<2mm) erupted by a volcano. Tephra is > 2mm (causality / risk)
- Lahars comprise ash and debris mixed with water (rain or melted glacier ice - jökulhlaup in Icelandic) and can flow at very high speeds e.g. 22 m/s over long distances, usually along river valleys (causality / risk)
- Volcanic landslides may be triggered by seismic activity (causality / risk)
- Toxic gases. Magma contains dissolved gases that are released into the atmosphere during eruptions. The most abundant gas typically released into the atmosphere from volcanic systems is water vapour (H_2O), followed by carbon dioxide (CO_2) and sulphur dioxide (SO_2) (causality / risk)
- Demographic impacts: Mortality, migration, population structure changes (scale / risk / time)
- Economic impacts: costs of losses (scale / risk / time)
- Social impacts: Health, infrastructure, families (scale / risk / time)
- Environmental impacts: Biosphere, lithosphere hydrosphere, atmosphere (scale / risk / time)
- Factors affecting risk and vulnerability:

(i) Economic factors: wealth of the place or community. Influences preparation, prediction and mitigation (mitigation /adaptation / resilience / risk / inequality)
(ii) Social factors such as the population density / proportions of age and gender groups that are susceptible to hazards. Public education can reduce vulnerability. (mitigation /adaptation / resilience / risk / inequality)
(iii) Political factors such as good governance and preparation of emergency services can reduce vulnerability of a population (mitigation /adaptation / resilience / risk / inequality)
(iv) Geographical factors associated with the location of the tectonic event can impact upon vulnerability. E.g. populations and facilities associated with urban and rural environments.

Isolation will impact on access for emergency services. (mitigation /adaptation / resilience / risk / inequality)
(v) The time of day will affect the exposure of a population as this will impact on the number of people in circulation. (mitigation /adaptation / resilience / risk / inequality)

AO2

Application of knowledge and understanding is deployed to evaluate whether pyroclastic flows present the greatest risk. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. This evidence could include:

- Speed of onset. Pyroclastic flows pose a great risk because of their speed of onset, however other volcanic hazards may happen suddenly such as lahars and gas emissions (temporal scale)
- Frequency. Some volcanic hazards can lead to high death tolls such as toxic flows of CO_2 at Lake Nyos Cameroon (1986), killing 1746 people and more than 8000 livestock, however these hazards occur infrequently (temporal scale)
- An examination of the severity of the risks associated with volcanic hazards. Pyroclastic flows pose a great demographic risk; however, ash falls can pose a greater risk to economic activity (Eyjafjallajokull eruption 2010) (risk / scale)
- Nature of volcanic event (effusive or eruptive). Lava flows most dangerous to human life come from effusive fissure eruptions, as highly fluid basalt magma can move down a hillside at 50km/hr and can spread a long way from the source. One deadly lava flow erupted from Nyiragongo volcano's flanks, draining the lava lake which had collected at the summit; it killed 72 people and devastated the town of Goma are damaging because more than 50% of the mix is sediment (like flowing concrete), which can kill huge numbers of people in its path (causality/ risk / scale)
- The relative importance of economic, social, demographic, political and geographical factors in alleviating the risks associated with tectonic hazards. E.g. the lack of predictions / warning systems. The Nevado del Ruiz eruption of 1985 was devastating because it was so unexpected. At 10 p.m., lahars ran down the eastern slope of the volcano killing 1800 people in Chinchina, and at 11 p.m. westward-flowing lahars engulfed the town of Armero, burying it 8m deep and killing 22,000 (place / mitigation / adaptation / resilience)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the hazards resulting from volcanic processes and their associated risks
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions about whether of all the hazards resulting from volcanic processes, pyroclastic flows present the greatest risk

Credit other valid approaches.

Section B: Contemporary Themes in Geography

Theme 2: Ecosystems

'Tropical rainforests are under greater threat than any other ecosystem'. To what extent do you agree?

[45 marks]
AO1 [20] AO2.1c [20] AO3.3 [5]

Focus: 3.2.3

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

Likely themes and specialised concepts include:

AO1

Knowledge and understanding of threats to ecosystems could include:

- Terrestrial and aquatic ecosystems (place / risk / scale)
- Wetlands such as the East Anglian Fens are under threat from industry, pollution and tourism (place / risk)
- Coral reefs such as The Great Barrier Reef are under threat from climate change and coral bleaching (place / risk)
- Tropical rainforests such as The Amazon are under threat from deforestation and mineral exploitation (place / risk)
- Threats associated with terrestrial and aquatic ecosystems may include: Climate change, industrial pollution, acid rain, agriculture, pressure from development (place / causality / scale / risk)

(a) Threats linked to climate change: E.g. The increased incidence of high-impact storms causing habitat destruction, changing temperature and rainfall patterns, which may affect the tolerance of species and sea level rise, which may occur too quickly for species to adjust. (place / scale / risk)

(b) Threats linked to industrial pollution: E.g. Increasing industrial activity is inadvertently causing a build-up of toxic compounds in the waters and sediments of many aquatic ecosystems. These compounds include Polycyclic Aromatic Hydrocarbons (PAHs) from oil and coal, which can persist in the environment for many years once released. (place / scale / risk)

(c) Threats linked to agriculture: E.g. Cattle ranching is the largest driver of deforestation in every Amazon country, accounting for 80% of current deforestation rates. In addition, Soy cultivation is becoming a major pressure too. Today Brazil has 24-25 million hectares devoted to the growth of this crop, and is currently the second largest producer of soybeans in the world. (place / scale / risk)

(d) Threats linked to pressure from development / infrastructure: E.g. In the Amazon basin, roads and other forms of infrastructure development have played a massive role in logging, deforestation, and agricultural expansion. About 95% of all deforestation occurs within 50km of highways or roads in the Brazilian Amazon. (place / scale / risk)

- The impacts of direct and indirect action on the biotic and abiotic components of terrestrial and aquatic ecosystems:

(a) Provisioning services: Impacts on food, water, timber and fibre E.g. The Caribbean has seen a significant decline in fish stocks since the mid-1980s. Furthermore, destructive fishing practices (such as the use of cyanide and dynamite) also have a major impact. (place / risk / scale / inequality)

(b) Regulating services: Impacts on climate / rainfall, water (e.g. flooding), waste, and the spread of disease. E.g. Pollution in wetlands is a growing concern, affecting drinking water sources and biological diversity. Drainage and run-off from crops introduces high concentrations of nitrogen and phosphorous nutrients to water bodies. Pesticides applied to cotton crops alone account for 25 per cent of the global insecticide market, but the area of cotton grown is just 2.4 per cent of the world's arable land. (place / risk / scale / inequality)
(c) Cultural services: Impacts on the beauty, inspiration and recreation opportunities that contribute to our spiritual welfare. E.g. The World Meteorological Organisation says that coral reefs yield more than $30 billion annually in goods and services (place / risk / scale / inequality)
(d) Supporting services: Impacts on soil formation, photosynthesis and nutrient cycling, which underpin growth and production. E.g. Costa Rica loses about 860 million tons of valuable topsoil every year (place / risk / scale / inequality)

- Strategies to conserve biodiversity E.g. Biodiversity 2020 (DEFRA 2011), the Darwin Initiative (1,055 Darwin projects in 159 countries - £140m awarded by the UK Government since 1992) (mitigation / adaptation / resilience / risk / sustainability)
- Conservation issues including decisions on which habitats / species to conserve, and sources and types of funding E.g. Ecotourism in Costa Rica. Small-scale tourist projects that create money for conservation as well as creating local jobs. It is estimated that 70% of Costa Rica's tourists visit protected environments. Debt-for-nature swaps E.g. Costa Rica and the USA. In 2007 Costa Rica agreed to spend $26 million on conservation projects. (mitigation / adaptation / resilience / risk / sustainability)

AO2

Application of knowledge and understanding is deployed to evaluate whether tropical rainforests are under greater threat than any other ecosystem. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Threats from direct action and indirect action operating at a range of scales from local to global (place / causality / scale / risk)
- An examination of the relative importance of threats confronting tropical rainforests and other ecosystems (place / risk / scale)
- Analysis of the impacts of exploiting tropical rainforests and other ecosystems (place / risk / scale / inequality)
- Tropical rainforests tend to be more fragile because of the importance of biomass as a nutrient store and because of high levels of biodiversity. Many ecological niches are highly specialised and losing them can have dramatic effects on the food chain. (place / causality / risk)
- Freshwater ecosystems in rivers, lakes and wetlands occupy less than 1% of the Earth's surface but they have a disproportionately large amount of biodiversity and provide important goods and services. (inequality / place / risk / scale)
- Unlike the change in rainforests, the loss of coral reefs is difficult to assess from satellites (place / scale / temporal scale)
- The nature and severity of threats may change over time (place / risk / scale / temporal scale)
- Effectiveness of strategies used to protect and conserve biodiversity at a variety of scales (mitigation / adaptation / resilience / risk / sustainability / temporal scale)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the threats facing tropical rainforests and other ecosystems
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions about whether tropical rainforests are under greater threat than any other ecosystem

Credit other valid approaches.

Theme 3: Economic Growth and Challenge: India or China or Development in an African Context

India

'Climate variability is a major constraint on human activity in India.' Discuss.

[45 marks]
AO1 [20] AO2.1c [20] AO3.3 [5]

Focus: 3.3.3

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

Knowledge and understanding of the climate variability and its constraints on human activity in India could include:

- Climate variability in terms of temperature e.g. over the last 35 years (1973–2008) in the Western drylands of Rajasthan temperature has shown a great variability with an average rise of about 0.5°C for the month of June. The maximum rise is visible in the latter part of the research period. 2016 was the warmest year in India since climate data came to be officially compiled (risk)
- Climate variability in terms of precipitation e.g. during the last 35 years (1973–2008) the average annual rainfall in the Western drylands of Rajasthan has shown a decrease of 50 mm. (risk)
- Climate variability in terms of the timing and amount of monsoon rainfall in India (causality / risk)
- Climate variability in terms of the distribution of extreme weather events (causality / risk).
- The scarcity of water resources associated with an increase in temperature and a decrease in precipitation creates water stress conditions in regions such as the Western drylands of Rajasthan and is responsible for droughts. Droughts impact on agriculture and urban activities as they can affect rain-fed agriculture, irrigation, electricity supply, sanitation and water contamination. In 2016 547 lives were lost in India as its southern states faced the worst drought in 40 years (causality / risk).

- The droughts and floods resulting from the variability in monsoon rainfall impact on agriculture and urban activities where they can affect rain-fed agriculture, irrigation, electricity supply, sanitation, water contamination (droughts) and loss of property and lives (floods). Sudden heavy rainfall in 2017 resulted in infrastructure damage in cities of Mumbai, Chandigarh and Bengaluru and unseasonal hail destroyed farm produce (causality/risk)

AO2

Application of knowledge and understanding is deployed to evaluate whether climate variability is a major constraint on human activity in India. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- The constraints associated with climate variability will not be felt in isolation, but in the context of other constraints presented by the physical environment and resource base of India (interdependence)
- Constraints on one type of human activity may impact on other human activities. Drought may render land less productive and can lead to food insecurity and problems with agriculture. This can, in turn, bring economic hardship and can lead to outmigration (interdependence)
- The impact of climate variability on human activity will vary according to the adaptive capacity of the individual, society and region (resilience). The vulnerability of arid regions to climate variability is further accentuated by low levels of socio-economic development. Many of India's poorest live in areas prone to climactic shifts and in occupations that are highly climate-sensitive
- Changes over time as climate is likely to become more variable over time, whereas other constraints, such as relief, will not vary (temporal scale)
- Strategies to mitigate against climate variability such as the adoption of drought resistant crops or irrigation schemes may reduce the constraints of climate variability. The advent of the Indira Gandhi Canal in western Rajasthan helps the region to cope with high variability in rainfall as improved water security in the region can be attained through expansion of canal network (mitigation/resilience)
- The impact of climate variability on human activity depends on the type of human activity e.g. agriculture is a high priority in India and the impact, if it follows the predictions, is expected to be widespread and severe

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the constraints on human activity in India due to climate variability
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions about whether climate variability is a major constraint on human activity

Credit other valid approaches.

China

'Climate variability is a major constraint on human activity in China.' Discuss.

[45 marks]
AO1 [20] AO2.1c [20] AO3.3 [5]

Focus: 3.3.3

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

Knowledge and understanding of the climate variability and its constraints on human activity in China could include:

- Climate variability in terms of temperature. Research shows that an upward trend is detected in China's annual mean air temperature (risk)
- Climate variability in terms of precipitation. The East Asian summer monsoon (EASM) is a major source of moisture to eastern China. Over the past few decades, the EASM has exhibited a weakening trend, marking a major climate shift in eastern China since the late 1970s (causality / risk)
- Climate variability in terms of the distribution of extreme weather events (causality / risk). From mid-June to July of 2016, China endured a series of extreme precipitation events, including the tail-end of Typhoon Nepartak, a Category 5 super typhoon
- Typhoon Nepartak triggered deadly floods across twenty-six of the nation's provinces. Official reports published on July 26, 2016 claim that the series of disasters led to a total of 833 deaths, 270 people missing, and a total of 6.24 million residents displaced. The floods have been marked as the world's second deadliest weather-related event of 2016 and damages, amounting to $22 billion, have been estimated to be the world's fifth most expensive weather-related natural disaster on record outside of the US (causality/risk)
- The droughts and floods resulting from the variability in monsoon rainfall impact on agriculture and urban activities where they can affect rain-fed agriculture, irrigation, electricity supply, sanitation, water contamination (droughts) and loss of property and lives (floods) (causality/risk)
- The effects of climate variability have been felt by many different sectors of China's economy. China's government estimates that direct economic losses from extreme weather events cost the country 1 to 3 percent of gross domestic product each year (causality/risk)

AO2

Application of knowledge and understanding is deployed to evaluate whether climate variability is a major constraint on human activity in China. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- The constraints associated with climate variability will not be felt in isolation, but in the context of other constraints presented by the physical environment and resource base of China (interdependence)

- Constraints on one type of human activity may impact on other human activities. Drought may render land less productive and can lead to food insecurity and problems with agriculture. This can, in turn, bring economic hardship and can lead to outmigration (interdependence)
- The impact of climate variability on human activity will vary according to the adaptive capacity of the individual, society and region (resilience). The vulnerability of arid central regions of China to climate variability is further accentuated by low levels of socio-economic development
- Changes over time as climate is likely to become more variable over time, whereas other constraints, such as relief, will not (temporal scale)
- Strategies to mitigate against climate variability such as policies to limit building in hazardous areas like floodplains and alleviate non-climate pressures such as overuse of freshwater resources together with large scale projects such as the Three Gorges Dam or the South-North Water Project will reduce the sensitivity and increase the resilience of China to climate variability (mitigation/resilience)
- The impact of climate variability on human activity depends on the type of human activity e.g. agriculture is a high priority in China and the impact, if it follows the predictions, is expected to be widespread and severe. However a plentiful water supply is vital for industrial development, therefore a lack of water resources has impacts far beyond the agricultural sector

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the constraints on human activity in China due to climate variability
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions about whether climate variability is a major constraint on human activity

Credit other valid approaches.

Development in an African Context

'Isolating the main cause of desertification is problematic'. Discuss.

[45 marks]
AO1 [20] AO2.1c [20] AO3.3 [5]

Focus: 3.3.13

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

Likely themes and specialised concepts include:

AO1

Knowledge and understanding of the causes of desertification could include:

- Environmental factors - Seasonal rainfall that is unreliable, climate change and associated loss of vegetation E.g. "The worst drought in 60 years" - 2011 East African Drought in Ethiopia, Somalia, Sudan and Kenya - (causality / place / scale / risk)
- Demographic factors - High birth rates and immigration of refugees (E.g. Population of Sudan in 2017 = 37.3m / Growth rate = 1.64% / BR = 27.9 / 1,000 / TFR = 3.57 per woman) In the case of the Sudan population pressure is increasing in areas with very limited natural resources. Urban development has brought roads, transport, education, hospitals, and piped water. This resulted in a slow migration of people away from rural areas in order to take advantage of urban facilities. This increased the concentration of people and livestock around urban areas and drastically increased the pressure on the surrounding land for cropping, grazing, and fuel. (causality / place / scale / risk)
- Social factors – Inappropriate agricultural practices, overgrazing, over-cultivation and deforestation to produce food and fuel E.g. Desertification tends to expand outwards from focal points, usually associated with human or livestock concentrations, especially, around watering points. A study in western Sudan has shown a steady increase of bare soil around boreholes over time, increasing from 20% to 55% in 30 years. Overgrazing accounts for 47% of the clearance of natural vegetation, whereas mechanized cropping and woodcutting, and urban demand for charcoal account for 22% and 19% respectively. The increasing need for wood for construction and fuel in the Sudan may accelerate the trend of woodland destruction. (causality / place / scale / risk)
- Economic factors – Inability to invest in strategies to prevent desertification / alleviate the impacts E.g. GDP per capita = $4,578. In July 2011 Sudan lost of three-quarters of its oil production due to the secession of South Sudan. In addition, many people rely on subsistence agriculture, which keeps 46.5% of the population (2009) at or below the poverty line. (causality / place / scale / risk)
- Political factors - Conflicts, corruption, unstable land tenure systems, bad policies, institutional and market failure all play a role in desertification. E.g. Civil strife in southern Sudan and Somalia for example, has led to the displacement of large numbers of people to Kenya. Some of these people have been settled in refugee camps thus adding to the problem of an increasing population in the affected areas. (causality / place / scale / risk)

AO2

Application of knowledge and understanding is deployed to evaluate the causes of desertification. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Analysis of how the causes of desertification vary from place to place (causality / place risk / scale)
- Analysis of how environmental, demographic, social, economic and political factors interact to cause desertification (causality / place / risk / scale / interdependence)
- An examination of the relative importance of environmental, demographic, social, economic and political factors as triggers for desertification (place / interdependence / scale)
- A discussion of how the causes of desertification change over time (temporal scale / place / risk)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the causes of desertification
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions about the causes of desertification

Credit other valid approaches.

Theme 4: Energy Challenges and Dilemmas

'Policies for demand reduction are essential in order to meet the demand for energy sustainably.' Discuss.

[45 marks]
AO1 [20] AO2.1c [20] AO3.3 [5]

Focus: 3.4.7

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

Likely themes and specialised concepts include:

AO1

Knowledge and understanding of strategies used to meet the demand for energy sustainably could include:

- Demand reduction policies: Walking or cycling instead of using a car is a direct reduction. Using public transport also achieves reduction, by the fact that it takes less energy to transport people in large numbers on one vehicle than for them all to use their own cars. E.g. Curitiba / Bogota. Modern telecommunications can make travelling to attend

meetings redundant E.g. teleworking, video conferencing and Skype (place / scale / adaptation / mitigation / sustainability)

- Promoting energy efficiency: Heat escapes from poorly insulated homes, newer lightbulbs use a tenth of the energy of traditional ones, lights are left on when not needed, the list goes on. It is estimated that carbon emissions could be stabilised by greater efficiency. E.g. Singapore / Freiburg / Copenhagen (place / scale / adaptation / mitigation / sustainability)
- Clean technologies for fossil fuels including carbon capture, carbon sequestration and gasification and transport technologies E.g. Polk Power Station (Tampa Electric), Florida / Siemens in Sweden – hybrid electric trucks / Nikola One (hydrogen electric truck) 1,200-mile range / routes 507 and 521 in London will exclusively run 51 electric buses (place / scale / sustainability / adaptation / mitigation)
- Alternative energy sources:
  - Nuclear is a major supplier world-wide, but generates debate E.g. Hinckley Point C / Chernobyl (place / risk / sustainability / scale)
  - Wave and wind power have relatively little damaging impact but much of their potential is yet to be developed E.g. Wind power generated 43.4% of electricity consumed in Denmark in 2017 (place / sustainability / scale)
  - HEP schemes have led to the release of methane, more powerful as a greenhouse gas than CO2 E.g. Three Gorges Dam (place / risk / sustainability / scale)
  - Biofuels lead to destruction of rainforest and use of agricultural land needed for food E.g. Indonesia (place / risk / sustainability / scale)
  - Geothermal, tidal and solar sources of power have few drawbacks, but the range of locations where they can be exploited is limited E.g. Reykjavik (geothermal) Singapore (solar) (place / risk / sustainability / scale)
  - An assessment of the strategies used to meet the demands for energy sustainably (sustainability / place / scale)

AO2

Application of knowledge and understanding is deployed to evaluate whether policies for demand reduction are essential in order to meet the demand for energy sustainably. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- An evaluation of demand reduction policies at a local, regional, national and global scale (place / adaptation / mitigation / resilience / scale / inequality / sustainability)
- Evidence provided to evaluate the success of demand reduction policies (place / scale / mitigation / adaptation / sustainability)
- A discussion of alternative ways of meeting energy demands in a sustainable fashion (adaptation / place / resilience / scale / inequality / sustainability)
- Spatial variations in the implementation of strategies designed to meet the demands for energy (inequality / place / scale / sustainability)
- The scale of the strategies employed – local / regional / national / global (place / scale)
- Changes over time – examination of the different approaches adopted over recent years (adaptation / mitigation / place / scale / sustainability)
- Improvements in the use of strategies over time (temporal scale)
- Evidence provided to evaluate the strategies used to meet the demands for energy (place / scale / sustainability)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about whether policies for demand reduction are essential in order to meet the demand for energy sustainably
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions about the effectiveness of strategies used to address the consequences of desertification

Credit other valid approaches.

Theme 5: Weather and Climate

'The vulnerability of populations to weather and climatic hazards is increasing'. Discuss.

[45 marks]
AO1 [20] AO2.1c [20] AO3.3 [5]

Focus: 3.5.4

This question requires candidates to demonstrate their ability to develop a sustained line of reasoning which is coherent, relevant, substantiated and logically structured.

Indicative content

The indicative content is not prescriptive and candidates are not expected to cover all points for full marks. Credit other valid points not contained in the indicative content.

AO1

Knowledge and understanding of the vulnerability of populations to weather and climatic hazards could include:

- Global warming has led to climate change including extreme weather events. In some locations, the occurrence of heat waves has more than doubled due to human influence (causality / place / risk / scale / time scale)
- Increases in heavy precipitation have probably also occurred over this time, but vary by region. It is likely that the number of heavy precipitation events over land has increased in more regions than it has decreased in since the mid-20th century (place / risk / scale / time scale)
- In the future, it is likely that the global frequency of tropical cyclones will decrease or stay the same, although maximum wind speeds and rainfall will increase (place / risk / scale / time scale)
- There has been a poleward shift and intensification of the mid-latitude depressions in the North Atlantic from the 1950s to the early 2000s, which is linked to a poleward shift in Northern Hemisphere jet streams. (place / risk / scale / time scale)
- Impacts of weather and climatic hazards include: demographic (deaths and migration), economic (cessation of production and costs of damage), social (homelessness) and environmental impacts (landslides, flooding) (risk / inequalities / place / scale / sustainability / interdependence)

- Vulnerability is the degree to which a system is susceptible to, or unable to cope with adverse effects of weather and climate hazards

AO2

Application of knowledge and understanding is deployed to evaluate whether the vulnerability of populations to weather and climatic hazards is increasing. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Weather and climatic hazards will be an increasingly important cause of human vulnerability globally in the future as the greater the impact of weather and climatic hazards, the harder it is to adapt (place / scale / mitigation / resilience)
- The vulnerability of populations to weather and climate hazards varies across regions, sectors, and social groups. Areas with low levels of socio-economic development and poor governance will be more vulnerable e.g. the impact of Hurricane Irma and Maria in the Caribbean in 2017
- The vulnerability of populations to weather and climate hazards will vary according to the adaptive capacity of the individual, society and region (resilience). Many of the world's poorest live in areas prone to weather and climatic hazards and in occupations that are highly climate-sensitive and are the least able to adapt
- Strategies to mitigate against weather and climatic hazards such as policies to limit building in hazardous areas like floodplains together with large scale projects such as the Three Gorges Dam or the South-North Water Project in China will reduce the vulnerability and increase the resilience of countries to weather and climatic hazards (mitigation/resilience)
- Changes over time as climatic hazards are likely to become more frequent and intensive over time and the world's population will continue to increase (temporal scale)
- The degree of vulnerability of populations to weather and climatic hazards depends on the type of human activity e.g. agriculture and tourism is arguably more vulnerable to weather and climatic hazards than industrial development (risk)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the vulnerability of populations to weather and climatic hazards
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions whether the vulnerability of populations to weather and climatic hazards is increasing

Credit other valid approaches.