GCE AS/A LEVEL

WJEC GCE AS/A LEVEL in

GEOGRAPHY

APPROVED BY QUALIFICATIONS WALES

SAMPLE ASSESSMENT MATERIALS

Teaching from 2016

This Qualifications Wales regulated qualification is not available to centres in England.

For teaching from 2016
For award from 2017

GCE AS/A LEVEL GEOGRAPHY

SAMPLE ASSESSMENT MATERIALS

Contents

Candidate Name	Centre Number					Candidate Number				
						0				

AS GEOGRAPHY

UNIT 1

CHANGING LANDSCAPES

SAMPLE ASSESSMENT MATERIALS

2 hours

For examiner's use only	
Q.1	
Q.2	
Q.3	
Q.4	
Q.5	
Q.6	
Total Marks	

ADDITIONAL MATERIALS
In addition to this examination paper, you will need a calculator.

INSTRUCTIONS TO CANDIDATES

In Section A, answer **either** questions 1 and 2 **or** questions 3 and 4

Answer **all** questions in Section B.

Use either black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

Write your answers in the spaces provided in this booklet.

If additional space is required you should use the lined pages at the end of this booklet. The question number(s) should be clearly shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part-question; you are advised to divide your time accordingly.

This paper requires that you make as full use as possible of appropriate examples and reference to data to support your answers. Sketch maps and diagrams should be included where relevant.

A blank page is available at the end of each section for you to add any relevant sketch maps and diagrams you may wish to include.

Section A: Changing Landscapes

*Answer **either** questions 1 and 2 **or** questions 3 and 4 from your chosen landscape.*

Where possible, make full use of examples and data to support your answers.

Coastal Landscapes

Answer questions 1 and 2 if this is your chosen landscape.

Figure 1: Managed retreat at Cwm Ivy, Gower Peninsular

Source: Gordon Howe

A new tidal saltmarsh is planned as the sea defence wall at Cwm Ivy was breached in December 2014. The sea wall was originally built in medieval times to keep the sea from farmland, which has been used mainly for livestock farming since the Middle Ages. Following the National Trust's view of working with natural processes, the sea will be allowed to reclaim farmland, creating 39 hectares of intertidal saltmarsh. The new feeding and resting sites for birds and other wildlife will provide a sustainable habitat and will ensure that the special wildlife value of this ecosystem is protected into the future. This new saltmarsh will also help to provide an alternative habitat for wildlife as new coastal protection schemes across the Carmarthen Bay Special Area of Conservation (SAC) cause unavoidable damage to the natural environment.

The project, by Natural Resources Wales and the National Trust, is the first of its kind in Wales

Source: adapted from Walesonline 9.12.14

1. (a) **Use Figure 1** to outline why '*managed retreat'* is a positive choice for Cwm Ivy.[5]

[insert 10 lines]

(b) Suggest one reason why the sea wall has been breached [3]

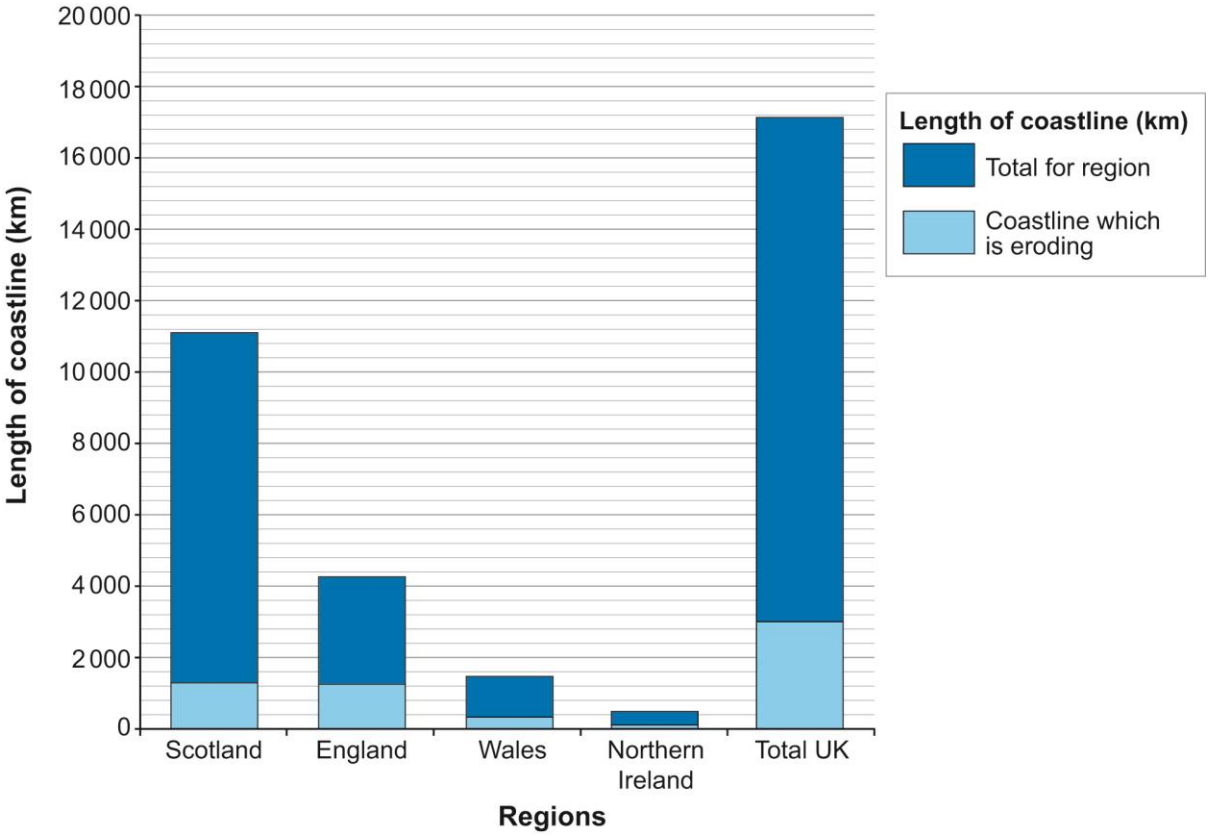
[insert 6 lines]

(c) Describe and explain how changes in sea level result in the formation of **one** coastal landform

[8]

[insert 16 lines]

Figure 2: Erosion of the UK coastline



Region	Length of coastline (km)	Length of coastline eroding (km)	% of coastline which is eroding
Scotland	11 154	1 298	11.6
England	4 273	1 275	29.8
Wales	1 498	346	
Northern Ireland	456	89	19.5
Total UK	17 381	3 008	17.3

Source: www.mccip.org.uk

2. (a) (i) Use **Figure 2** to calculate the percentage (%) of coastline which is eroding in Wales. Show your workings.

Workings: *[insert 2 lines]*

Answer: *[insert 2 lines]* [2]

(ii) Use **Figure 2** to describe the extent of coastline erosion in Wales compared to that in Scotland. [3]

[insert 6 lines]

(b) Suggest **one** lithological factor that causes the rate of coastal erosion to vary. [3]

[insert 6 lines]

(c) Describe and explain why deposition plays a role in the development of tombolos. [8]

[insert 16 lines]

Glaciated Landscapes

Answer questions 3 and 4 if this is your chosen landscape.

Figure 3: Photographs of Qori Kalis Glacier, Peru, in 1978 and 2011

Qori Kalis is the largest outlet glacier of the world's largest ice cap in the tropics, the Quelccaya Ice Cap, which lies on a plateau 5,691 metres high in the Andes mountains of Peru. In 1978 the glacier was still advancing. By 2011, the glacier had retreated, leaving a lake some 35 hectares in area and about 200 feet (60 metres) deep.

3. (a) **Use Figure 3** to describe changes to the landscape between 1978 and 2011. [5]

[insert 10 lines]

(b) Suggest how the changes shown in **Figure 3** could lead to a glacial lake outburst flood (GLOF). [3]

[insert 6 lines]

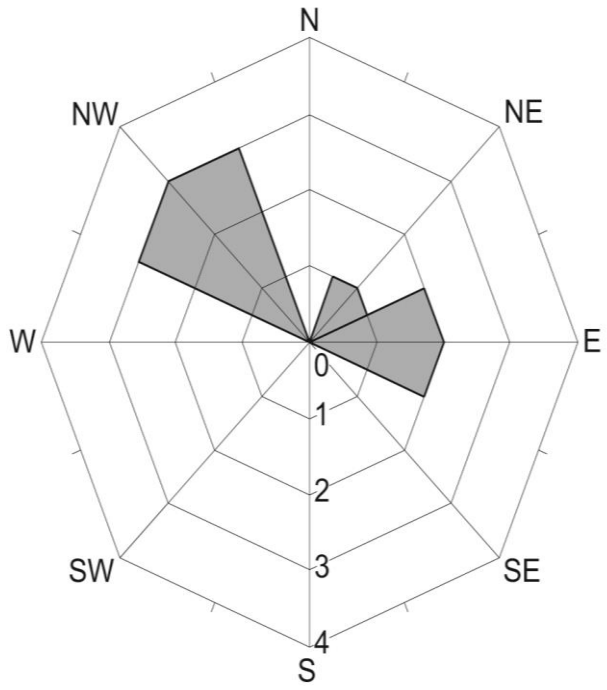
(c) Describe and explain why glacial deposition plays a role in the formation of terminal moraines.

[8]

[insert 16 lines]

Figure 4: The orientation of 10 selected cirques in Wales

Figure 4a: Rose diagram of 10 cirques in Wales



Key: Number of cirques (1 to 4)

Figure 4b: Table of named cirques and their orientation

	Name of cirque	Orientation
A	Craig Maesglas	NE
B	Craig Portas	N
C	Glaslyn	E
D	Llyn Bochlwyd	N
E	Llyn Cau	E
F	Llyn Coch	NW
G	Llyn Du'r Arddu	NW
H	Llyn Gafr	NW
I	Llyn Llydaw	N
J	Llyn y Gadair	N

Source: http://physio-geo.revues.org

4. (a) (i) Use the data in **Figure 4b** to complete the rose diagram for the orientation of cirques in Wales. [2]

(ii) Describe the pattern of orientations shown in **Figure 4.** [3]

[insert 6 lines]

(b) Suggest **one** reason for the pattern shown in **Figure 4.** [3]

[insert 6 lines]

(c) Describe and explain why freeze-thaw weathering plays a role in the formation of cirques. [8]

[insert 16 lines]

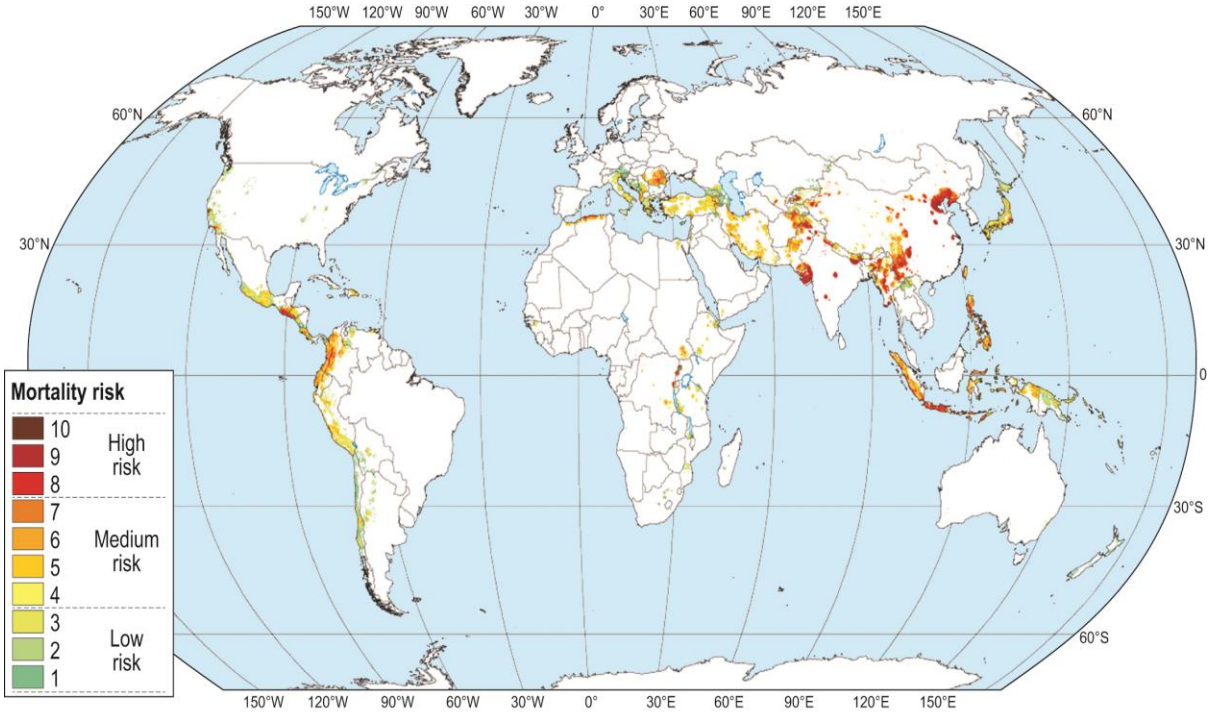
This blank page may be used for any relevant sketch maps and diagrams you want to include.

Section B: Tectonic Hazards

*Answer **all** questions.*

Where possible, make full use of examples and data to support your answers.

Figure 5: Mortality risk associated with earthquakes



Source: http://www.preventionweb.net

5. (a) (i) Use **Figure 5** to describe the distribution of areas with a high mortality risk associated with earthquakes. [5]

[insert 10 lines]

(ii) Suggest **three** human factors that may explain why the areas shown in **Figure 5** have a high mortality risk. [9]

[insert 18 lines]

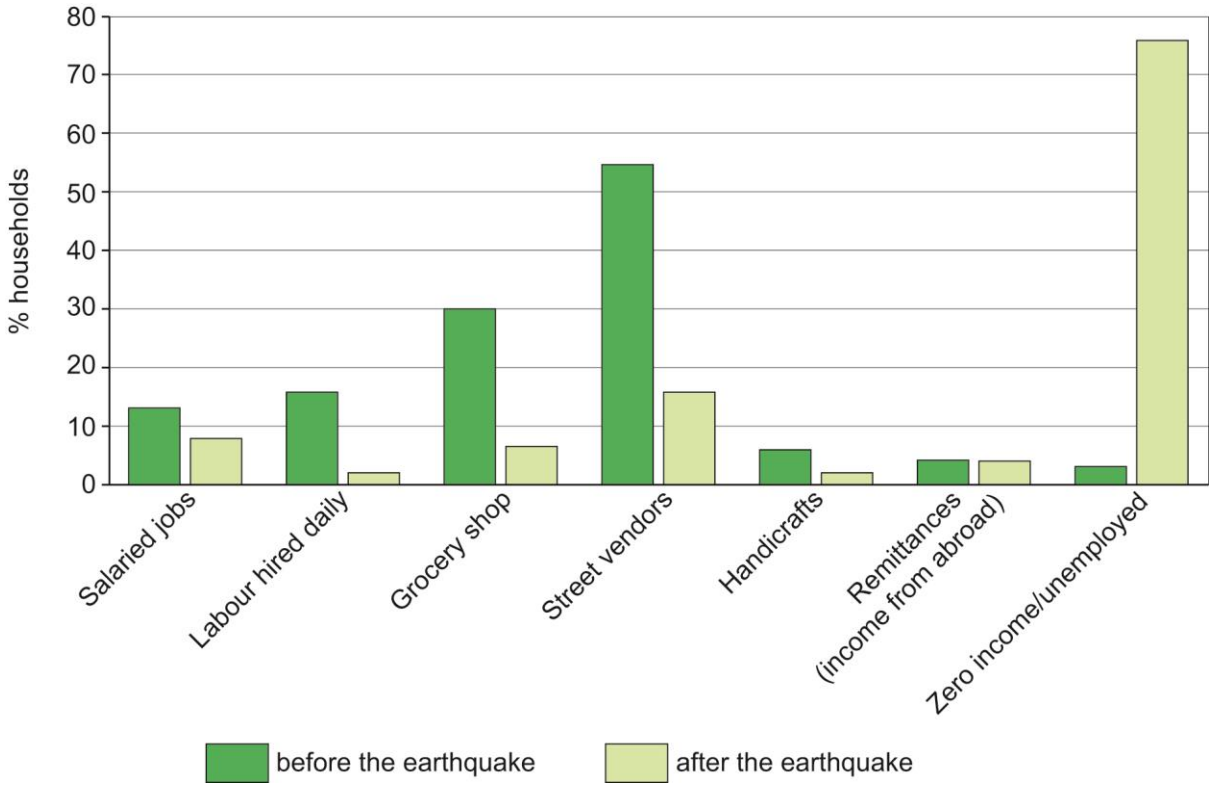
(b) Outline how the following characteristics affect the level of impact of a tectonic hazard. [8]

Magnitude: *[insert 4 lines]*

Speed of onset: *[insert 4 lines]*

Figure 6: Sources of household income in the shanty towns of Port-au-Prince, Haiti, before and after the earthquake of 12 January 2010.

Note: Households may have more than one source of income.



Source: http://www.cash/learning.org

6. (a) Use **Figure 6** to describe changes in the source of household income before and after the 2010 Haiti earthquake. [5]

[insert 10 lines]

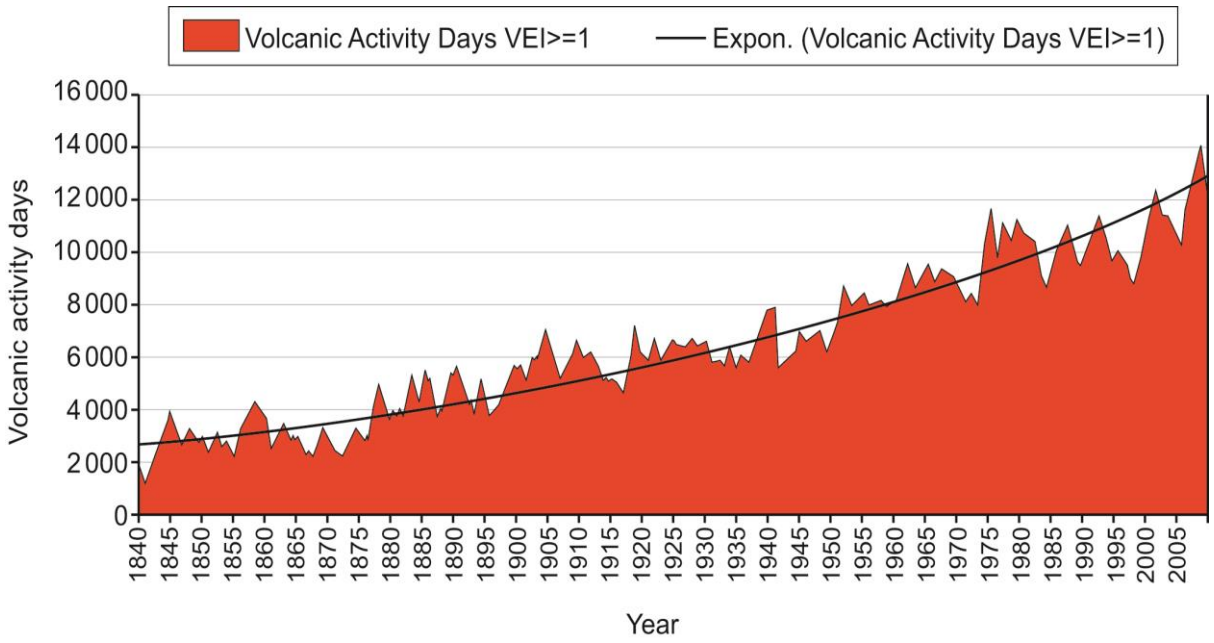
(b) Explain how earthquakes produce tsunamis. [5]

[insert 10 lines]

(c) Suggest the short-term responses that could be used to mitigate the consequences of changes shown in **Figure 6.** [10]

[insert 20 lines]

Figure 7a: Global Volcanism 1840-2008



7. (a) (i) Use **Figure 7a** to describe trends in global volcanism. [5]

[insert 10 lines]

(ii) Outline **two** reasons why these trends may not be accurate. [4]

[insert 8 lines]

Figure 7b: Sinabung volcano in Sumatra, Indonesia blowing a black cloud of volcanic ash after the eruption on October 29, 2014.

7 (b) Use **Figure 7b** to suggest how people living in the homes shown would be affected by the ash cloud [3]

[insert 6 lines]

(c) Describe the demographic and economic impacts of the eruption of **one** volcano. [10]

[insert 20 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

Unit 1: Changing Landscapes

Mark Scheme

Guidance for Examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

The mark scheme for this unit includes both point-based mark schemes and banded mark schemes.

Point-based mark schemes

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision should be made. Each creditworthy response should be ticked in red ink. Do not use crosses to indicate answers that are incorrect. The targeted assessment objective (AO) is also indicated.

Banded mark schemes

For questions with mark bands the mark scheme is in two parts.

The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response.

The second part is an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this unit. The targeted AO(s) are also indicated, for example AO2.1c.

Assessment Objective	Strands	Elements
AO1 Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.	N/A	This AO is a single element.
AO2 Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.	N/A	1a - Apply knowledge and understanding in different contexts to analyse geographical information and issues.
		1b - Apply knowledge and understanding in different contexts to interpret geographical information and issues.
		1c - Apply knowledge and understanding in different contexts to evaluate geographical information and issues
AO3 Use a variety of relevant quantitative, qualitative and fieldwork skills to: • investigate geographical questions and issues • interpret, analyse and evaluate data and evidence • construct arguments and draw conclusions.	1 - investigate geographical questions and issues	N/A
	2 - interpret, analyse and evaluate data and evidence	
	3 - construct arguments and draw conclusions	

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

When deciding on a band, the answer should be viewed holistically. Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Banded mark schemes Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is also provided for banded mark schemes. Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The specialised concepts from the specification that apply in the indicative content are underlined.

The mark scheme reflects the layout of the examination paper. Mark questions 1 and 2 or questions 3 and 4 in Section A, all questions in Section B. If the candidate has responded to all questions in Section A, mark all these responses. Award the higher marks attained; further possible rubric infringements will be discussed at the marking conference.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

Section A: Changing Landscapes

Either: Coastal Landscapes

1. a Use *Figure 1* to outline why 'managed retreat' is a positive choice for Cwm Ivy.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award up to 2 marks for the development of any of the following points up to a maximum of 5 marks					5		**5**

Indicative content

Managed retreat (called managed realignment in SMPs) is allowing the shoreline to move naturally, but managing the process to direct it in certain areas. This is usually done in low-lying areas. (Environment Agency definition).

Positive ideas / benefits that the 'managed retreat' bring to Cwm Ivy include:

- creates a new saltmarsh / wetland ecosystem (1 mark)
- saltmarsh is a valuable habitat for wildlife (1 mark)
- saltmarsh is a sustainable habitat / as it works with nature (1 mark)
- provides feeding and resting sites for birds and other wildlife (1 mark)
- new habitat will compensate for damage to other areas of natural environment during new protection schemes (1 mark)

Development of any of the above points (+1 mark)

Credit other valid points.

1. b Suggest *one* reason why the sea wall has been breached	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following with 2 marks for further development			3				**3**

Indicative content

The breaching of sea defences is increasing. The reasons or causality include:

- increasing number of storms (1 mark) increase the number of high energy waves (1 mark) more erosion (1 mark)
- increasing severity of storms / high winds driving waves (1 mark) increase the number of high energy waves (1 mark) more erosion (1 mark)
- sea level rise (1 mark) more wave erosion through tidal cycle (1 mark) undercuts sea wall (1 mark)
- original sea wall was very old (1 mark)
- increasing cost of repair (1 mark) may mean this was not well maintained (1 mark) weakens ability to defend against waves (1 mark)
- cost-benefit reasons eg Cwm Ivy farmland may not very valuable (1 mark)

Credit other valid points.

1.c	**Describe and explain how changes in sea level result in the formation of one coastal landform**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
		5	3					**8**

Indicative content

Answers could refer to the process of sea level change to establish whether eustatic or isostatic change is the driver and whether the change is positive or negative.
The most common landforms to be explained will be: emergent - raised beaches, raised wave-cut platforms and raised cliffs (with associated wave-cut notches, arches, stacks etc); submergent – rias, fiords and Dalmatian coastlines.
Accept other valid landforms.

Marking guidance

Likely AO1 content includes: description of the processes that result in sea level change, description of the formation of the selected landform with possible use of diagram(s).

Near the upper end, answers that score highly at AO2.1a (explain how) should give reasons or causes and show an understanding of how process has resulted in the characteristics of the selected landform

Near the lower end, answers that score weakly at AO2.1a may be little more than a description of the selected landform

Award the marks as follows:

	AO1 [5 marks]	**AO2.1a [3 marks]**
	Demonstrates knowledge and understanding of the formation of one coastal landform	*Applies (AO2.1a) to explain how changes can result in the formation of one coastal landform*
Band		
3	4-5 marks Mostly accurate knowledge and understanding of the formation of the selected landform Developed example(s) Well-annotated sketches / diagrams may be used	3 marks Well-developed description and explanation of the formation of the selected landform that links process and characteristics Contextual example(s) are well applied to the question
2	2-3 marks Partial knowledge and understanding of the formation of the selected landform Generalised knowledge of example(s) Simple sketches / diagrams may be used	2 marks Description with partial or unbalanced explanation of the formation of the selected landform that links process and characteristics Contextual example(s) are well applied in part to the question
1	1 mark Limited knowledge and understanding of the formation of the selected landform Limited exemplification Basic sketches / diagrams may be used	1 mark Basic description with limited explanation of the formation of the selected landform that links process and characteristics The example does not support the context
0	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

2. a (i) Use *Figure 2* to calculate the percentage (%) of coastline which is eroding in Wales. Show your workings.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for the process and 1 mark for the correct answer					2		**2**

Indicative content

- Correct process (1 mark)
- Length of coastline eroding (346) x 100 = 34600 ÷ Length of coastline (1498)
- Correct answer (1 mark) – 23.1% (allow 23.0 or 23.09)

Credit other valid points.

2. a (ii) Use *Figure 2* to describe the extent of coastline erosion in Wales compared to that in Scotland.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 3 marks					3		**3**

Indicative content

- Wales has a bigger percentage (%) which is eroding (1 mark)
- More significant as Wales has a smaller coastline than Scotland (1 mark)
- Quantification (1 mark) eg Wales 23.1 versus Scotland 11.6 (1 mark)

Credit other valid points.

2. (b) Suggest ***one*** lithological factor that causes the rate of coastal erosion to vary.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following with 2 marks for further development			3				**3**

Indicative content

The difference may be due to variations in:

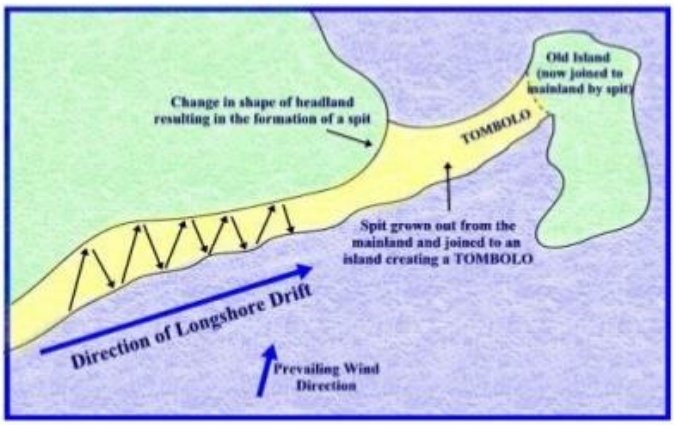
- Mineral composition (1 mark) some minerals decompose easily (1 mark) increase rate of erosion (1 mark)
- Hardness (1 mark) some rocks are more resistant to mechanical erosion (1 mark) erode more easily (1 mark)
- Solubility of rocks (1 mark) limestone consists of minerals that are soluble (1 mark) erode faster (1 mark)
- Structure (1 mark), the presence/absence/frequency of joints and bedding planes (1 mark), makes some rocks more/less resistant or prone to mechanical and chemical erosion (1 mark).

Credit other valid points.

2. c Describe and explain why deposition plays a role in the development of tombolos.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	5	3					**8**

Indicative content

Likely AO1 content includes: description of the development of a tombolo, with possible use of diagram(s).



- Material is transported along a coastline and where there is a reduction in energy the sediment is dropped
- If there is a change in direction in the coastline and longshore drift, a spit may begin to form. Where there is an island off shore it may be joined to the mainland by the spit ie a tombolo is formed eg Portland
- Sometimes wave refraction around an island will cause loss of energy which causes deposition to occur

Marking guidance

Near the upper end, answers that score highly in AO2.1a will develop the role deposition plays in the formation of a tombolo (causality).This may be by demonstrating the effects of the process of deposition in forming or developing a tombolo or looking at deposition as one of several processes which contribute to the tombolo's formation. Near the lower end, explanation will be very limited.

Credit other valid approaches.

Award the marks as follows:

	AO1 [5 marks]	**AO2.1a [3 marks]**
	Demonstrates knowledge and understanding of the development of tombolos	*Applies (AO2.1a) explaining the role of deposition in the development of tombolos*
Band		
3	4-5 marks Mostly accurate knowledge and understanding of the *development* of tombolos Developed example(s) Well-annotated sketches / diagrams may be used	3 marks Well-developed description and explanation of the role of deposition in the *development* of tombolos; some structure
2	2-3 marks Partial knowledge and understanding of the *development* of tombolos Generalised knowledge of example(s) Simple sketches / diagrams may be used	2 marks Description and partial or unbalanced explanation of the role of deposition in the *development* of tombolos
1	1 mark Limited knowledge and understanding of the *development* of tombolos Limited exemplification Basic sketches / diagrams may be used	1 mark Basic description with limited explanation of the role of deposition in the *development* of tombolos
0	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Or: Glacial Landscapes

3. a Use *Figure 3* to describe changes to the landscape between 1978 and 2011.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 5 marks						5	**5**

Indicative content

This mountainous area of the Andes is showing signs of the effects of climate change as there has been a change from an advancing glacier in 1978 to a retreat in 2011. The question does not ask candidates to explain but to give a description. Change is required and so simple descriptions of the landscape at either date do not fully answer the question.

The changes may include:

- The Qori Kalis glacier has shrunk (1 mark)
- The snout of the glacier is further upslope (1 mark)
- A lake has appeared in 2011 (1 mark)
- More (lateral) moraine / scree is exposed in 2011 (1 mark) on either side of lake / valley (1 mark)
- Quantification e.g. the lake is 35 hectares in area (1 mark)

3. b Suggest how the changes shown in *Figure 3* could lead to a glacial lake outburst flood (GLOF).	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 3 marks			3				**3**

Indicative content

The changes indicate that there is a warming of temperatures (causality) which have led to melting of the glacier and the formation of a pro-glacial lake. If this continues, the pressure could cause the dam to break, creating a GLOF or Jokulhaup.

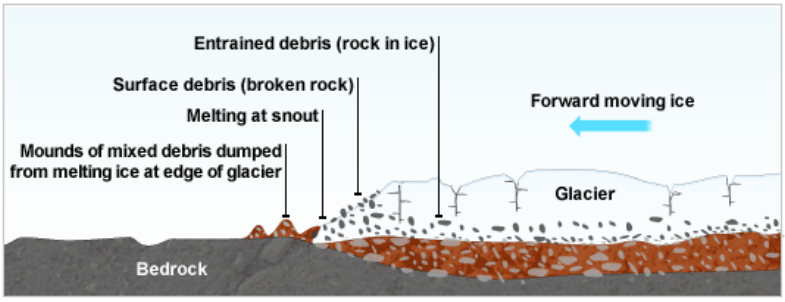
- The melting of the glacier has created a pro-glacial lake (1 mark)
- Continued melting may cause lake to get bigger (1 mark)
- The moraine dam may burst (under increased pressure) to cause a GLOF (1 mark)

Credit any other valid point.

3. c Describe and explain why glacial deposition plays a role in the formation of terminal moraines.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	5	3					**8**

Indicative content

A terminal moraine, also called end moraine, is a moraine that forms at the snout of a glacier, marking its maximum advance, or lowest elevation. Likely AO1 content includes description of how a terminal moraine forms.



As ice melts at the snout of the glacier, rock debris is dumped at the forward edge

- Terminal moraine forms from freeze-thaw weathering / frost shattering and glacial erosion (plucking and abrasion) removes material from the sides and bed of the glacier
- This moraine is carried along with the glacier until warmer conditions prevail
- Ablation at the snout will decrease the glacier's capacity to carry materials and so these are deposited, creating a terminal moraine (BBC bitesize)
- It resembles a large mound of unsorted material, varying in size from silt sized glacial flour to large boulders

Marking guidance

Near the upper end, answers that score well at AO2.1a will focus on the role of deposition in the formation of moraines, explaining the role of glacial deposition in the formation of terminal moraines. This may be shown as a detailed breakdown of how glacial deposition causes (causality) terminal moraines to form.
Near the lower end, explanation will be very limited.
Credit other valid approaches.

Award the marks as follows:

	AO1 [5 marks]	**AO2.1a [3 marks]**
	Demonstrates knowledge and understanding of the formation of moraines	*Applies (AO2.1a) explaining the role of deposition in the formation of moraines*
Band		
3	4-5 marks Mostly accurate knowledge and understanding of the formation of moraines Developed example(s) Well-annotated sketches / diagrams may be used	3 marks Well-developed description and explanation of the role of deposition in the formation of moraines; some structure
2	2-3 marks Partial knowledge and understanding of the formation of moraines Generalised knowledge of example(s) Simple sketches / diagrams may be used	2 marks Description with partial or unbalanced explanation of the role of deposition in the formation of moraines
1	1 mark Limited knowledge and understanding of the formation of moraines Limited exemplification Basic sketches / diagrams may be used	1 mark Basic description with limited explanation of the role of deposition in the formation of moraines
0	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

4. a (i) Use the data in *Figure 4b* to complete the rose diagram for the orientation of cirques in Wales.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 2 marks					2		**2**

Indicative content

Candidates will need to understand the table and work out which piece of data has not been plotted and then accurately plot the figure and complete the diagram.

- Plot 4 cirques for north
- Join the 'line' to complete the diagram.

Credit other valid points.

4. a (ii) Describe the pattern of orientations shown in *Figure 4.*	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 3 marks					3		**3**

Indicative content

- North has the highest number of cirques (1 mark)
- North west also has a high number (1 mark)
- None in west to south east (1 mark)
- Quantification (1 mark)

Credit other valid points.

4. b Suggest *one* reason for the pattern shown in *Figure 4.*	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 3 marks			3				**3**

Indicative content

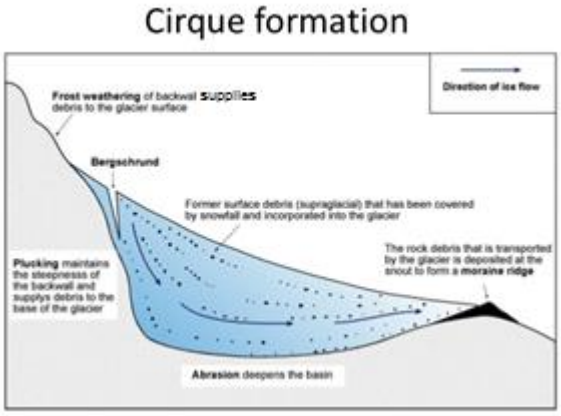
The distinct pattern suggests a strong reason for this (causality). In the Northern hemisphere more cirques are found facing north because:

- northerly aspects are slightly protected from the sun / less direct insolation (1 mark)
- snow to lie on the ground for longer and accumulation is highest (1 mark)
- less insolation also means ablation / melting is lowest (mark)

Credit other valid points.

4.c Describe and explain why freeze-thaw weathering plays a role in the formation of cirques.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	5	3					**8**

Indicative content



Likely AO1 content includes description of freeze-thaw weathering in the formation of cirques.

- Cirques (cwms or corries) develop in mountainous areas where there is an accumulation of snow in hollows. The snow compacts into ice and this accumulates over many years to compact into névé**.** The hollow is deepened by nivation (by the combined effects of repeated freezing and thawing and removal of material by melting snow)
- The snow and névé, then grows into a corrie / cirque glacier which moves downhill because of gravity, the mass of the ice, water at its base and the slope it is on
- It will move in a rotational movement because of the slope and the overlying pressure. The ice freezes to the back wall and as it does plucks rock out steepening the back wall
- Freeze thaw and frost shatter above the hollow on exposed rocks shatters the rock and deliver shattered rock known as scree to the ice
- This material from plucking and frost shatter is then moved along under the ice abrading the hollow by scratching the surface rock. This is further aided under the ice by the fact that pressure melting point is often surpassed allowing melt water to exist at the base and allowing basal sliding to occur
- This creates a steep back wall and a hollow known as a corrie or cirque. In addition, water trickling down the Bergschrund encourages even more freeze thaw action encouraging the corrie to grow further
- At the front edge of the corrie the ice thins out as it speeds up on its journey down the valley, and this area is eroded less and crevasses form. This leaves a lip of rock. When the ice melts a corrie lake can form

Marking guidance

Near the upper end, answers that score well in AO2.1a will focus on an explanation of the role of freeze-thaw weathering in the formation of a cirque. This may be shown as a detailed breakdown of how freeze-thaw weathering provides material for erosion to occur (causality), especially abrasion. Near the lower end, answers will have very limited explanation.
Credit other valid approaches.

Award the marks as follows:

	AO1 [5 marks]	**AO2.1a [3 marks]**
	Demonstrates knowledge and understanding of cirque formation	*Applies (AO2.1a) explaining the role of freeze-thaw weathering in cirque formation*
Band		
3	4-5 marks Mostly accurate knowledge and understanding of cirque formation. Developed example(s) Well-annotated sketches / diagrams may be used	3 marks Well-developed description and explanation of the role of freeze-thaw weathering in cirque formation; some structure

2	2-3 marks Partial knowledge and understanding of cirque formation. Generalised knowledge of example(s) Simple sketches / diagrams may be used	2 marks Description with partial or unbalanced explanation of the role of freeze-thaw weathering in cirque formation
1	1 mark Limited knowledge and understanding of cirque formation Limited exemplification Basic sketches / diagrams may be used	1 mark Basic description with limited explanation of the role of freeze-thaw weathering in cirque formation
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section B: Tectonic Hazards

5. a (i) Use *Figure 5* to describe the distribution of areas with a high mortality risk associated with earthquakes.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark per point and allow 1 mark for quantification up to a maximum of 5 marks						5	**5**

Indicative content

- Highest concentrations in SE Asia (1 mark)
- Large area in NE China (1 mark)
- Large area in S China (1mark)
- Border of India / Pakistan (1 mark)
- Large area in Himalayas (1 mark)
- Large area in Sumatra / Java (1 mark)
- Large area in Andes / Central America (1 mark)
- Anomalies in East Africa or California (1 mark)
- Quantification (1 mark)

Credit other valid points.

5. a (ii) Suggest *three* human factors that may explain why the areas shown in *Figure 5* have a high mortality risk.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
			9				**9**

Indicative content

The question is asking candidates to put forward and develop plausible and informed ideas based on wider knowledge and understanding to suggest why areas have a high mortality risk. The focus is on human factors.

There are a number of factors that could be used to explain why mortality is high: economic development, levels of technology available, population characteristics (age/gender/education), quality of governance to co-ordinate preparation or response, quality of urban or rural housing, medical facilities and infrastructure. Answers may mix factors in explanation – in particular economic development may be used to outline the operation of other factors.

Marking guidance

Near the upper end, answers that interpret (AO2.1b) will suggest why areas have a high mortality risk and should develop the link to why these factors cause high mortality; for example, areas of high mortality have less effective medical facilities, which means that victims are not treated for injuries incurred during the earthquake. The population is also vulnerable to the effects of disease after the earthquake as medicine and treatment are not available. Near the lower end, there will be very little interpretation.

Credit other valid approaches.

Award the marks as follows

Band	Marks	
3	7-9 marks	Suggests factors in a structured way. Contextual examples are well-applied.
2	4-6 marks	Partial and / or unstructured suggestions of factors applied in part to the question.
1	1-3 marks	Limited suggestions of factors. The examples do not support the context.
	0 marks	Response not creditworthy or not attempted.

5. b) Outline how the following characteristics affect the level of impact of a tectonic hazard. **Magnitude** **Speed of onset**	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	8						**8**

Indicative content

The question is asking for a summary of the influence of magnitude and speed of onset on the level of impact of earthquakes and volcanoes. This may come in the form of the hazard in general or part of the chosen hazard ie volcanoes or pyroclastic flows. When outlining magnitude there may be comment on the strength / energy involved in the event and how this may influence the level of damage or how strength may influence the character of the hazard – tsunami height, amount of ash produced etc. The speed of onset may refer to preparation times, evacuation opportunities etc. There could be comment on sudden eruptions and those that give lots of warning.

Marking guidance

Answers that score highly for AO1 will outline the above and may recognise scales when magnitude is discussed (Richter, Mercali, VEI) but this is not required for full credit. These characteristics should be linked to the level of impact in the form of mortality, injury, migration etc. and both need to be addressed. At the lower end, there will be a limited outline, with simplistic points.
Credit other valid points.

Award the marks as follows

Band	Marks	
3	6-8 marks	Outlines characteristics in a structured way. Contextual examples are well-applied. Spelling, punctuation and grammar used with a high degree of accuracy.
2	4-5 marks	Partial and / or unstructured outline of characteristics. Contextual examples are applied in part to the question. Or outlines one characteristic in a structured way with contextual examples. Spelling, punctuation and grammar used with a reasonable degree of accuracy.
1	1-3 marks	Limited outline of characteristics. The examples do not support the context. Spelling, punctuation and grammar used with limited accuracy.
	0 marks	Response not creditworthy or not attempted.

6. a Use *Figure* 6 to describe changes in the source of household income before and after the 2010 Haiti earthquake.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
						5	**5**

Indicative content

- Most sources of income have reduced
- Only zero income has increased
- Remittances stay the same
- Largest drop is street vendors
- Smallest drop is handicrafts
- Quantification

Credit other valid points.

6. b Explain how earthquakes produce tsunamis.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	5						5

Indicative content

Tsunami is a huge wave caused by either volcanic or earthquake activity on the sea floor under the ocean from sudden movement of tectonic plates. The activity on the sea floor from shock waves radiating from the epicentre displaces the sea bed which creates a wave deep in the ocean, moving towards land. When the wave reaches shallower water the wave height increases and waves get closer. When these hit land they cause huge flooding eg Indian Ocean 2004 and Japan 2011.

Marking guidance

Near the upper end, answers that score well for AO1 will give an accurate and developed account of the link between earthquakes and tsunamis. There will be clear factual detail in the explanation of process. Near the lower end, answers that score weakly may be limited in their explanation of process.
Credit other valid points.

Award the marks as follows:

Band	Marks	
3	4-5	Developed ideas of how earthquakes produce tsunamis.
2	2-3	Partial and/or unstructured ideas of how earthquakes produce tsunamis.
1	1	Limited ideas of how earthquakes produce tsunamis.
	0	Response not creditworthy or not attempted.

6. c. Suggest the short-term responses that could be used to mitigate the consequences of changes shown in *Figure 6*.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
			10				**10**

Indicative content

The question is looking for suggestions, that is, interpretation of short-term responses which occur in the weeks and months after the earthquake. The resource shows that sources of income may have decreased after the earthquake and so families will require support for food, shelter, medical help and employment. Responses may come in the form of food, shelter, first aid and medical provisions, and aid from national and international agencies. Answers may refer to the nature of the responses and give detail on how the responses function to mitigate the effects of the earthquake.

Marking guidance

Near the upper end, those that score highly on interpretation (AO2.1b) will suggest short-term responses will involve reference to the essential elements of mitigation which can be seen as structural, for example infrastructure, provision of shelter and non-structural, for example provision of funds, social and community services. Measures should be given context as required in the question so responses could be directed at different income sources.

Credit other valid points.

Award the marks as follows:

Band	Marks	
3	7-10 marks	Suggests short term responses in a structured way. Mostly accurate link to mitigation of effects. Spelling, punctuation and grammar used with a high degree of accuracy.
2	4-6 marks	Partial and / or unstructured suggestions of short term responses. Partial or unbalanced link to mitigation of effects. Spelling, punctuation and grammar used with a reasonable degree of accuracy.
1	1-3 marks	Limited suggestions of short term responses. Limited link to mitigation of effects. Spelling, punctuation and grammar used with limited accuracy.
	0 marks	Response not creditworthy or not attempted.

7. a (i) Use *Figure 7* to describe trends in global volcanism.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for any of the following up to a maximum of 5 marks						5	5

Indicative content

- Overall increase
- Rate of increase changes over time
- Fluctuating
- Level of fluctuation increases 1970-2008
- Lowest 1841
- Highest 2006/7
- Quantification

Credit other valid points.

7. a (ii) Outline *two* reasons why these trends may not be accurate.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for any of the following with further mark for development						4	4

Indicative content

- Distant parts of world becoming accessible(1 mark) events are now known (1 mark
- Increased technology such as satellites (1 mark) allows eruptions to be monitored (1 mark)
- Increased reporting of events (1 mark) allows more recording (1 mark)
- Better monitoring (1 mark) allows more events to be recorded at lower VEIs (1 mark)

Credit other valid points.

7 (b) Use Figure 7b to suggest how people living in the homes shown would be affected by the ash cloud	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for any of the following or a combination of points up to maximum of 3			3				3

Indicative content

Looking for comments which clearly demonstrate the application of knowledge and understanding through the interpretation of the photograph in the context shown.

- Ash would cover the land. As a result, crops may be affected and yields fall.
- The ash would get into the homes shown as they are poorly constructed. This would make living conditions more difficult.
- Ash cloud may affect the quality of the air. This may particularly affect any babies and the elderly living in the homes.
- The quality of the housing suggests a poor community. Therefore may not be able to pay for the additional food needed when the crops are affected or for access to healthcare as a result of any respiratory problems from the event.
- Ash could get into the water supply that the homes rely on. This could lead to sickness.

Credit other valid points.

7. c Describe the demographic and economic impacts of the eruption of *one* volcano.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	10						**10**

Indicative content

Answers should identify the distinctive features, and give factual detail about the demographic and economic impacts of one volcano. This can be a description of one eruption or review the impacts of a number of eruptions of the same volcano.

The content of answers will vary considerably with the selection of volcanic and / or earthquake event(s) and the examples used to illustrate the response. Expect a variety of generic ideas to form the basis of responses – some may look at long- and short-term impacts whilst some may see impacts as local, regional or global.

Reference may be made to a number of impacts:

- level of mortality
- migration / displacement
- disease / injury
- costs of housing damage
- costs of damage to infrastructure – water, gas, electricity
- costs caused by disruption of transport and communication
- costs of disruption and destruction of industry – agriculture, manufacturing, service
- costs of recovery

Marking guidance

Near the upper end, answers that score well will give an accurate and developed account of impacts for both elements. Near the lower end, answers that score weakly may be limited in their description of impacts.

Credit other valid points.

Band	Marks	
3	6-8 marks	Describes the demographic and economic impacts in a structured way. Contextual examples are well-applied. Spelling, punctuation and grammar used with a high degree of accuracy.
2	4-5 marks	Partial and / or unstructured description of the demographic and economic impacts. Contextual examples are applied in part to the question. Spelling, punctuation and grammar used with a reasonable degree of accuracy.
1	1-3 marks	Limited description of the demographic and economic impacts. The examples do not support the context Spelling, punctuation and grammar used with limited accuracy.
	0 marks	Response not creditworthy or not attempted.

Candidate Name	Centre Number					Candidate Number				
						0				

AS GEOGRAPHY

UNIT 2

CHANGING PLACES

SAMPLE ASSESSMENT MATERIALS

1 hour 30 minutes

For examiner's use only	
Q.1	
Q.2	
Q.3	
Q.4	
Q.5	
Q.6	
Total Marks	

ADDITIONAL MATERIALS
In addition to this examination paper, you will need a calculator.

INSTRUCTIONS TO CANDIDATES

Answer **all** questions in Section A.

Answer **all** questions in Section B.

Use either black ink or black ball-point pen.

Write your name, centre number and candidate number in the spaces at the top of this page.

If additional space is required you should use the lined pages at the end of this booklet. The question number(s) should be clearly shown.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part-question; you are advised to divide your time accordingly.

This paper requires that you make as full use as possible of appropriate examples and reference to data to support your answers. Sketch maps and diagrams should be included where relevant.

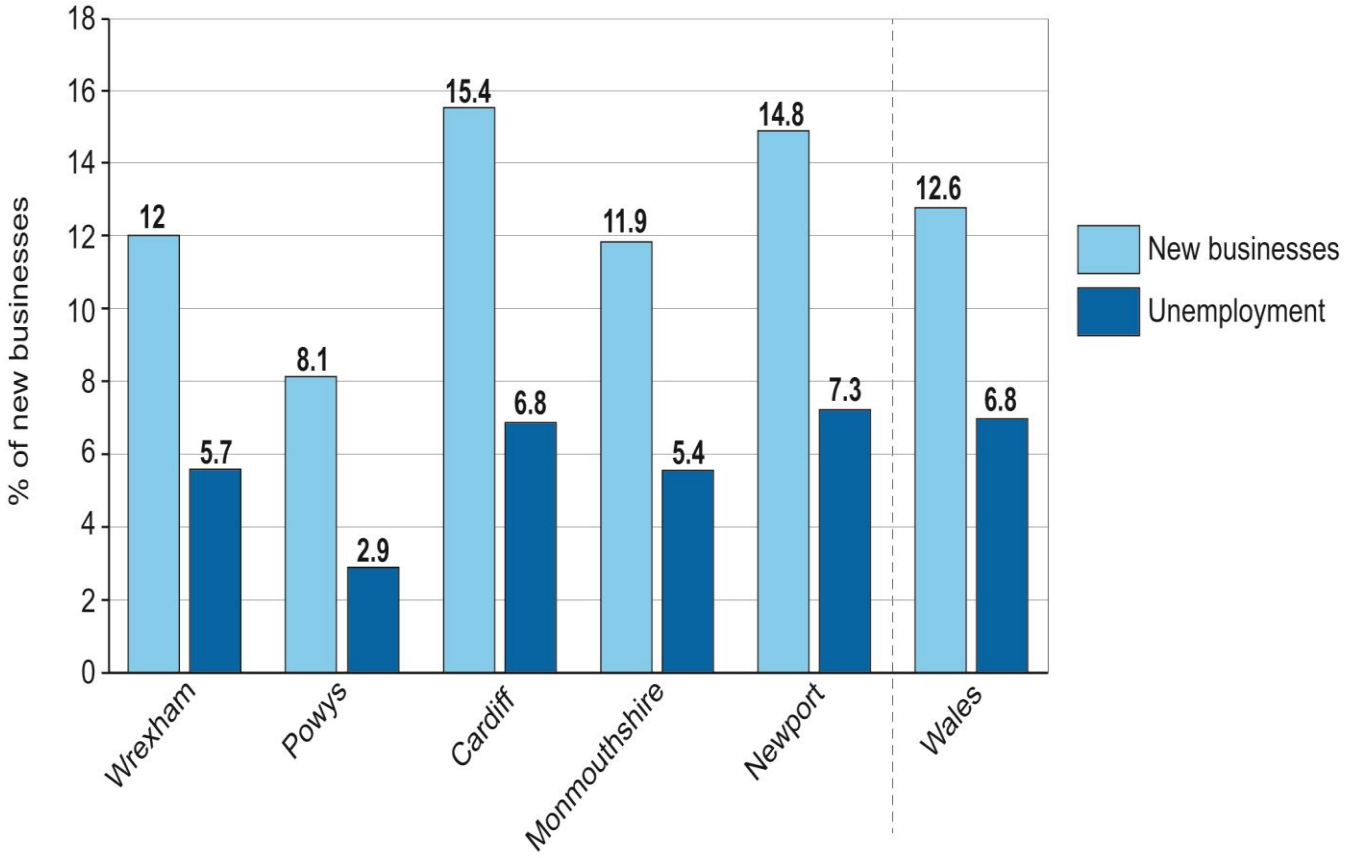
A blank page is available at the end of each section for you to add any relevant sketch maps and diagrams you may wish to include.

Section A: Changing Places

*Answer **all** questions.*

Where possible, make the fullest use of examples and data to support your answers.

Figure 1: New businesses and unemployment data for selected regions in Wales, 2014



Source: https://statswales.wales.gov.uk

1. (a) (i) Use **Figure 1** to describe variations shown in the percentage of new businesses.

[3]

[insert 6 lines]

(ii) Identify **one** graphical and **one** statistical technique that could be used to investigate a possible correlation between the new businesses and unemployment data shown in Figure 1. [2]

[insert 4 lines]

(iii) Suggest **one** government strategy to encourage new business growth in areas with high unemployment such as those shown in Figure 1. [3]

[insert 8 lines]

(b) Describe and assess the threat that internet shopping poses to retailing in central urban areas. [8]

[insert 16 lines]

Figure 2: A new plan for Thornton Moor

Source: www.livefortheoutdoors.com

Plans have been approved the construction of a trial 60m-high mast on a West Yorkshire moor, near the former home of the Brontë sisters, to generate greater supplies of renewable energy to meet the UK's emissions target and provide energy for 4,500 homes. The landscape may soon see the addition of four large wind turbines. Local campaigners say that it will be a disaster for local tourism and also for the UK's natural environmental heritage.

Charlotte Bronte's Wuthering Heights is one of the all-time great English novels, set on the unspoiled and wild Thornton Moor. Every year, approximately five thousand fans of the novel visit the moor, which is less than 10km from the Brontë Museum.

Those opposed to the wind turbine scheme, including local residents and the locally-run Brontë society, think the landscape of Thornton Moor should remain untouched by turbines. Anthea Orchard, who chairs the Thornton Moor Wind Farm Action Group, told a newspaper: "It is devastating for everybody and everything. The damage to the landscape is going to be irreparable. Our whole way of life is going to suffer and we will fight it to the death".

Source: adapted from www.geographyinthenews.co.uk

2. (a) (i) Using **Figure 2**, analyse conflicting perspectives about the use of Thornton Moor. [5]

[insert 10 lines]

(ii) Suggest why tourism may not solve the problem of below-average incomes for many local people living in places such as Thornton Moor. [3]

[insert 6 lines]

(b) Describe and assess the social impacts of counter-urbanisation for rural areas. [8]

[insert 16 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

Section B: Fieldwork Investigation in Geography

*Answer **all** questions.*

*In your answers to Section B you should include evidence from **your** fieldwork investigations in physical geography and human geography.*

Figure 3: A choropleth map showing urban land use in a UK town in 1967

3 An A level Geography student decided to survey current land uses in a small town. She consulted the results of a study from around 50 years ago, shown in **Figure 3**, as the starting point for her investigation.

(a) Describe the distribution of industrial areas in **Figure 3**. [3]

[insert 6 lines]

(b) Discuss possible ways of improving and updating the classification system used in 1967 before carrying out a new survey of current land uses. [8]

[insert 16 lines]

(c) Outline one possible method of analysing how land use varied between different parts of the town, other than by maps. [3]

[insert 6 lines]

4 Discuss the importance of teamwork for carrying out your fieldwork investigation in **human** geography.

*You should state clearly the title of your **human** geography investigation* [9]

[insert 18 lines]

5 Describe and justify the choice of case study area used for your fieldwork investigation in **physical** geography.

*You should state clearly the title of your **physical** geography investigation* [9]

[insert 18 lines]

This blank page may be used for any relevant sketch maps and diagrams you want to include.

For continuation only.

Unit 2: Changing Places

Mark Scheme

Guidance for Examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

The mark scheme for this unit includes both point-based mark schemes and banded mark schemes.

Point-based mark schemes

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision should be made. Each creditworthy response should be ticked in red ink. Do not use crosses to indicate answers that are incorrect. The targeted assessment objective (AO) is also indicated.

Banded mark schemes

For questions with mark bands the mark scheme is in two parts.

The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response.

The second part is an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this unit. The targeted AO(s) are also indicated, for example AO2.1c.

<table>
<tr><th>Assessment Objective</th><th>Strands</th><th>Elements</th></tr>
<tr><td>AO1

Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.</td><td>N/A</td><td>This AO is a single element.</td></tr>
<tr><td rowspan="3">AO2

Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.</td><td rowspan="3">N/A</td><td>1a - Apply knowledge and understanding in different contexts to analyse geographical information and issues.</td></tr>
<tr><td>1b - Apply knowledge and understanding in different contexts to interpret geographical information and issues.</td></tr>
<tr><td>1c - Apply knowledge and understanding in different contexts to evaluate geographical information and issues</td></tr>
<tr><td rowspan="3">AO3

Use a variety of relevant quantitative, qualitative and fieldwork skills to:
• investigate geographical questions and issues
• interpret, analyse and evaluate data and evidence
• construct arguments and draw conclusions.</td><td>1 - investigate geographical questions and issues</td><td rowspan="3">N/A</td></tr>
<tr><td>2 - interpret, analyse and evaluate data and evidence</td></tr>
<tr><td>3 - construct arguments and draw conclusions</td></tr>
</table>

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

When deciding on a band, the answer should be viewed holistically. Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content. Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Banded mark schemes Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is also provided for banded mark schemes. Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The specialised concepts from the specification that apply in the indicative content are underlined.

The mark scheme reflects the layout of the examination paper. Mark all questions in Section A, and Section B. Possible rubric infringements will be discussed at the marking conference.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

Section A: Changing Places

Mark all questions in this section.

1. a (i) Use *Figure 1* to describe variations shown in the percentage of new businesses.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for any of the following up to a maximum of 3 marks						3	**3**

Indicative content

- The highest is Cardiff (1 mark)
- The range is 7.3%; it goes from 8.1% to 15.4% (1 mark)
- The majority have a percentage lower than the Welsh average (1 mark)
- Percentage of new businesses is higher in urban areas (1 mark)

Credit other valid points.

1. a (ii) Identify *one* graphical and *one* statistical technique that could be used to investigate a possible correlation between the new businesses and unemployment data shown in Figure 1.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
In each case, award 1 mark					2		**2**

Indicative content

Graphical: scatter graph (1 mark)
Statistical: Spearman Rank Correlation Coefficient (1 mark)

Credit alternative suggestion (such as the t-test) if it allows correlation to be investigated.

1. a (iii) Suggest *one* government strategy to encourage new business growth in areas with high unemployment such as those shown in Figure 1.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award up to 3 marks for suggested details of an appropriate government strategy. Award a maximum of 2 marks for a new business strategy which is not clearly appropriate for a high unemployment area			3				**3**

Indicative content

- Reduced business costs / taxes (1 mark) are a feature of past and present enterprise zones (1 mark) which have often been designated in high unemployment areas to maximise new start-ups (1 mark) and may provide further development or a parallel example (1 mark)
- Flagship development / capital-intensive schemes (1 mark) can be a powerful growth pole (1 mark) for retailers, bringing lower-skilled tertiary work to high unemployment areas (1 mark) and may provide further development or a parallel example (1 mark)
- Investment in new infrastructure / high-speed rail (1 mark) makes a deindustrialised place more attractive for new businesses / retailers that depend on accessibility (1 mark) by reducing travel time for customers / for transporting products to other markets (1 mark) and may provide further development or a parallel example (1 mark)
- Retraining / education (1 mark) to provide skills for unemployed people formerly working in primary / secondary sector (1 mark) making the local workforce more attractive to tertiary sector start-ups (1 mark) and may provide further development or a parallel example (1 mark)

Credit other valid strategies for deindustrialised places.

1. b Describe and assess the threat that internet shopping poses to retailing in central urban areas.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	5			3			**8**

Indicative content

- Internet shopping has taken off since 2000, thanks to broadband and success of new online stores like Amazon and ebay, and online sales of high street retailers such as Tesco and John Lewis
- this plays a role in the problem many smaller towns suffer (loss of traditional retail / CBD decline)
- some smaller towns, however, have regenerated through a shift towards entertainment
- larger cities have often strengthened their retailing (new flagship developments and malls) and diversified into entertainment, or office and service growth
- it is not a threat if it can be made part of the existing business model eg 'click and collect'

Marking guidance

Near the upper end, answers that score well at AO2.1c will assess the threat and how the question invites consideration of scale or different types of urban place (small towns or large cities). Another approach might be to assess how perspectives on the severity of the threat may vary eg it could be argued that out-of-town retail parks pose a greater threat. Another approach might be to assess the way some places have been highly resilient to threat and have adapted well, whereas others have reached a tipping-point / threshold so further decline inevitable. Near the lower end, there will be limited assessment, with little uncovering of any underlying assumptions contained in the question.
Credit other valid approaches.

Award the marks as follows:

	AO1 [5 marks]	**AO2.1c [3 marks]**
Band	*Demonstrates knowledge and understanding of internet shopping and central urban areas*	*Applies (AO2.1c) to appraise / judge through assessing the threat*
3	4-5 marks Mostly accurate knowledge and understanding of internet shopping and central urban areas Developed exemplification	3 marks A developed assessment of the threat(s); some structure
2	2-3 marks Partial knowledge and understanding of internet shopping and / or central urban areas Generalised exemplification	2 marks Partial or unbalanced assessment of the threat(s)
1	1 marks Limited knowledge and understanding of either internet shopping or central urban areas Limited exemplification	1 mark Limited examination of any threat
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

2. a (i) Using *Figure 2*, analyse conflicting perspectives about the use of Thornton Moor.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
In each case, award 1 mark for any of the following up to a maximum of 5 marks						5	**5**

Indicative content

- Until now the wilderness has been preserved / not used (1 mark) which in turn supports tourism in neighbouring areas (1 mark)
- Demonstrates analytical skill by selecting a statistic / quotation / representation that shows support for the current management strategy, for instance, 5,000 fans visit the moor each year, under the current management regime (1 mark) wind turbines are an industrial use (primary industry) of the countryside (1 mark)
- Demonstrates analytical skill by selecting a statistic / quotation / representation that shows opposition to industrial use / the wind turbine proposal, for instance, Anthea Orchard says she will 'fight it to the death' in her interview (1 mark) strongly suggesting a rural conflict / different perspectives (1 mark)

Credit other valid points.

2. a (ii) Suggest why tourism may not solve the problem of below-average incomes for many local people living in places such as Thornton Moor.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
Award 1 mark for each of the following reasons and 1 mark for development or exemplification; that is a maximum of 3 marks			3				**3**

Indicative content

- Tourism may follow a seasonal pattern so low annual income (1 mark)
- Underemployment can occur if some jobs are part-time / zero hours (1 mark)
- 'Niche tourism' (as found at Thornton Moor) is not mass tourism and may not generate much interest (1 mark) thereby limiting multiplier effect and high-salary job creation (1 mark)
- Lack of skills / education might limit local people's participation in employment (1 mark) or employers may prefer to hire eastern European migrants to work in hotels / hospitality (1 mark)
- Declining agricultural employment over time explains why the problem originally exists (1 mark)

Credit other valid points.

2.b Describe and assess the social impacts of counter-urbanisation for rural areas.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	5			3			**8**

Indicative content

Counter-urbanisation is a movement of people from urban to rural areas. It is an age-selective movement of certain groups (middle-aged / families with children / retirees). Other social impacts may include movement of professionals / different social economic groups (SEGs) into rural regions. Also credit changes in the character of places and services linked with social changes linked with demographic changes.

Likely content:

- in-migration of young families, with professional parents (may be self-employed or working in service industries). As a result, rising house prices in popular areas for migrants may push out lower-income groups, accelerating social change further. This accelerates out-migration of young (though this varies according to how isolated / remote areas are)
- in-migration of retirees, alongside youthful out-migration, may result in ageing population and a range of changes in the social geography of places
- movement of A8 migrants into some farming areas so increasing ethnic / linguistic diversity
- there are some social reactions attached to this / social tensions in community

Marking guidance

Near the upper end, answers that score well at AO2.1c will assess how these different impacts are **interrelated** (professional migrants drive housing shortages and accelerate out-migration). Another approach might be to assess how different types of rural place are affected as changes may be different for remote and urban fringe areas. Also, the changes may on balance be regarded as positive or negative with implications for community sustainability. Some changes can cause thresholds to be crossed (eg local schools / colleges shut down due to selective out-migration). Near the lower end, there will be little assessment, with little uncovering any underlying assumptions contained in the question.
Credit other valid approaches.

Award the marks as follows:

	AO1 [5 marks]	**AO2.1c [3 marks]**
Band	*Demonstrates knowledge and understanding of counter-urbanisation and its impacts*	*Applies (AO2.1c) to appraise / judge through assessing the social impacts for rural places*
3	4-5 marks Mostly accurate knowledge and understanding of counter-urbanisation Detailed and balanced impacts	3 marks Well-developed assessment of different impacts, may demonstrate how they are linked; some structure
2	2-3 marks Partial knowledge and understanding of counter-urbanisation Generalised or unbalanced details of impacts	2 marks Partial examination of different types of impact
1	1 marks Limited knowledge and understanding of counter-urbanisation Limited details of any impacts	1 mark Limited examination of any impacts
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section B: Fieldwork Investigation in Geography

Mark all questions in this section.

3. a Describe the distribution of industrial areas in *Figure 3.*	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	AO3.3	Total
Award 1 mark for any of the following up to a maximum of 3 marks; 1 mark only may be awarded for quantification / use of data as shown.						3		**3**

- Mainly to the North bounded by the River Soar
- Also on the west side, as far south as High Street
- A zone of industry lies south of High Street but not extended to edge of settlement
- Industry is entirely absent from the east of the settlement
- The southern zone is about 1/4 mile in width - quantification

Credit other valid points.

3. b Discuss possible ways of improving and updating the classification system used in 1967 before carrying out a new survey of current land uses.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
				5	3		**8**

Indicative content

Discussion of ways to improve the original survey include:

- different types of shop might be recorded separately eg comparison and convenience
- shops may have flats above which could require a mixed land use category
- different types of residential could be recorded eg flats and terraced housing

Discussion of ways of updating the original survey include:

- tourist functions may have developed since 1960s
- an entertainment zone may have developed as part of urban rebranding
- industry may have declined leaving derelict areas that require a new category

Marking guidance

Near the upper end, answers that score well at AO2.1c will provide a structured discussion of how the original survey was self-limiting (by not distinguishing between different types of retailing, for instance) in addition to the changes that need to be made to reflect the UK's post-industrial economy. Near the lower end, there will be limited discussion addressing improvements and updating. They may state how the survey might be changed without a rationale as to why the changes are an improvement.

Credit other valid approaches.

Award the marks as follows:

	AO2 (5 marks)	**AO3 (3 marks)**
Band	*Applies (AO2.1c) to appraise / judge through discussing the merits of the changes*	*Use of a variety of practical ways of changing the survey's classification system*
3	4-5 marks A developed discussion of how the changes improve and update the original survey	3 marks Clear account of a range of survey changes (expect three or more)
2	2-3 marks Partial or unbalanced discussion of how the changes improve and/or update the original	2 marks A partial account of some survey changes (expect at least two)
1	1 mark Limited discussion of how the changes improve or update the original survey	1 mark Limited account of at least one survey changes
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

3. c Outline one possible method of analysing how land use varies between different parts of the town, other than by using maps.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	AO3.3	Total
Award 1 mark for any of the following up to a maximum of 3 marks					3			**3**

Indicative content

Either graphical or statistical methods are acceptable. Graphical possibilities include comparisons of proportional circles, divided bars. Statistical methods include application of Chi-squared test.

Graphical analysis (example of proportional circles)

- Convert frequencies of each category into degrees (1 mark)
- Draw size of circles proportional to total number of properties (1 mark)
- Method provides clear visualisation of the significance of any differences (1 mark)

Statistical analysis (example of Chi-squared test)

- Convert data into frequencies showing observed values (1 mark)
- Calculate the expected values for each part of town were there to be no variation (1 mark)
- Determine the significance of the difference between observe and expected values (1 mark)

Credit alternative methods of analysis in line with the exemplars used here.

4. Discuss the importance of teamwork for carrying out your fieldwork investigation in *human* geography.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	6			3			**9**

Indicative content

- Teamwork may be essential for collection of fieldwork data especially when a large are is to be surveyed such as an urban area where traffic counts are being carried out or photographs collected: it may be important that all samples are recorded at the same time which can be achieved when a large team is positioned strategically with the urban area.
- Participation is also important at the planning stage: a group of people may work more effectively than an individual to produce robust inquiry questions, identify project risks and plan what will happen in the field.
- Participation can also speed up and improve the quality of data treatment and analysis once the data has been collected. Teams of students can collaborate to produce displays, combine their photographs and other qualitative data, or run statistical tests.

Marking guidance

Near the upper end, answers that score well at AO2.1c will discuss in a structured way how teamwork is important in different ways at different stages of the inquiry process. Another approach might be to discuss the importance of working in large groups to generate large data sets practically through fieldwork, but the reduced importance of teamwork in the later phases. Near the lower end, there will be limited discussion of the importance of teamwork, and may outline some group activities in the field.

Credit other valid approaches.

Award the marks as follows:

	AO1 (6 marks)	**AO2 (3 marks)**
Band	*Applies AO1 to describe aspects of the fieldwork investigation involving teamwork*	*Applies (AO2.1c) to appraise / judge through discussing the importance of fieldwork*
3	5-6 marks A developed description of a located fieldwork investigation which uses teamwork.	3 marks Clear discussion of the importance of fieldwork for two or more stages of the investigation

2	3-4 marks Partial or unbalanced description of a located fieldwork investigation which uses teamwork.	2 marks Partial discussion of the importance of fieldwork for one or two stages of the investigation
1	1-2 mark Limited description of fieldwork which uses teamwork.	1 mark Limited justification discussion of the importance of fieldwork for one stage of the investigation
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

5. Describe and justify the choice of case study area used for your fieldwork investigation in *physical* geography.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	Total
	6			3			**9**

Indicative content

- Practical factors including costs and accessibility - the area's situation
- Landscape / geological characteristics of the area's site and suitability for study. Responses may argue these fitted well with the fieldwork aim and provide detail of this (eg outlines beach of glacial deposits)
- Scale / size of the place and whether area fitted well with the project aim / scale. Answer may outline a rationale for this (eg may outline how all of the area could be practically surveyed in two days)
- Physical risk concerns are an important factor (eg when working in upland areas or high-energy coastlines or coastlines with rapid incoming tides)

Marking guidance

Near the upper end, answers that score well at AO2.1c will justify the choice of location in a structured way that emphasises suitability on multiple grounds. Another approach might be to draw comparisons with less suitable sites that were ruled out as a case study location. Another approach may be to discuss the extent to which the choice included particularly well-defined features. Near the lower end, there will be limited justification of the choice of area beyond citing its usefulness as a generic example.

Credit other valid approaches.

Award the marks as follows:

	AO1 (6 marks)	**AO2 (3 marks)**
Band	*Applies AO1 to describe the characteristics of the case study area*	*Applies (AO2.1c) to appraise / judge through justifying site suitability*
3	5-6 marks A developed description of the case study site and its situation	3 marks Clear justification using two or more rationales
2	3-4 marks Partial or unbalanced discussion of the case study site and/or situation	2 marks Partial justification using one or two rationales
1	1-2 mark Limited discussion of the case study site or situation	1 mark Limited justification using one rationale
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

A LEVEL GEOGRAPHY

UNIT 3

GLOBAL SYSTEMS AND GLOBAL GOVERNANCE

SAMPLE ASSESSMENT MATERIALS

2 hours

ADDITIONAL MATERIALS
In addition to this examination paper, you will need **one** 12 page answer book and a calculator.

INSTRUCTIONS TO CANDIDATES

Answer questions 1 **and** 2 and, **either** 3 **or** 4 in Section A.

Answer questions 5 **and** 6 and, **either** 7 **or** 8 in Section B.

Answer **one** question in Section C.

Use black ink or black ball-point pen.

Write your answers in the separate answer book provided.

Write your name, centre number and candidate number in the spaces at the top of the answer book.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question; you are advised to divide your time accordingly.

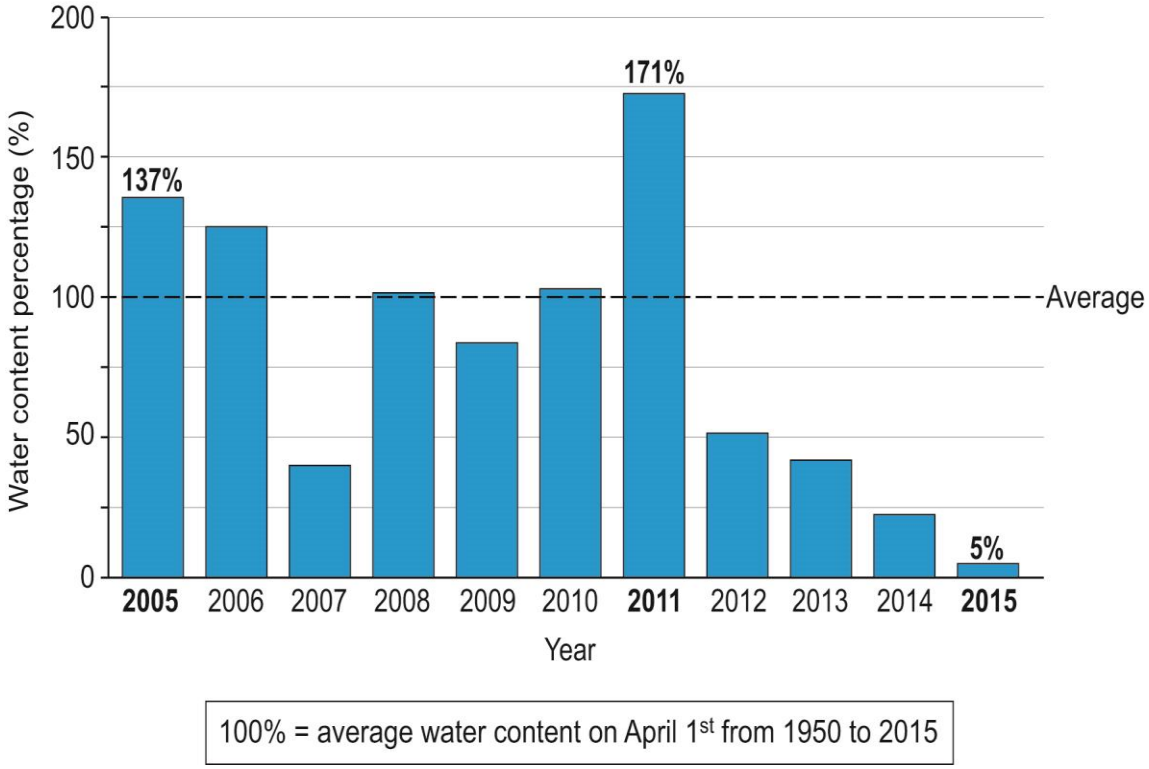
This paper requires that you make as full use as possible use of appropriate examples and references to data to support of your answers. Sketch maps and diagrams should be included where relevant.

Section A: Water and Carbon Cycles

Answer questions 1 and 2 and, ***either*** *3* ***or*** *4.*

Where possible, make full use of examples and data in support of your answers.

Figure 1: Water content of the Sierra Nevada USA snowpack on April 1st from 2005 to 2015



1. (a) Use **Figure 1** to describe changes in the water content of the Sierra Nevada snowpack between 2005 and 2015. [3]

(b) Outline how convection can lead to the formation of clouds. [4]

2. (a) Describe **two** carbon pathways between land and atmosphere. [5]

(b) To what extent does deforestation cause changes to the size of carbon stores in **one** selected biome. [5]

Either

3 Describe and evaluate how changes to stores within the drainage basin, such as snowpacks, have an impact on patterns of discharge. [18]

Or

4 Describe and evaluate the impacts of recent increases in the atmospheric carbon store on the oceans. [18]

Section B – Global Change and Challenges

Answer questions 5 and 6 and, **either** 7 **or** 8.

Where possible, make full use of examples and data in support of your answers.

Figure 2: The number and proportion of groups of migrants in selected regions in Wales in 2011

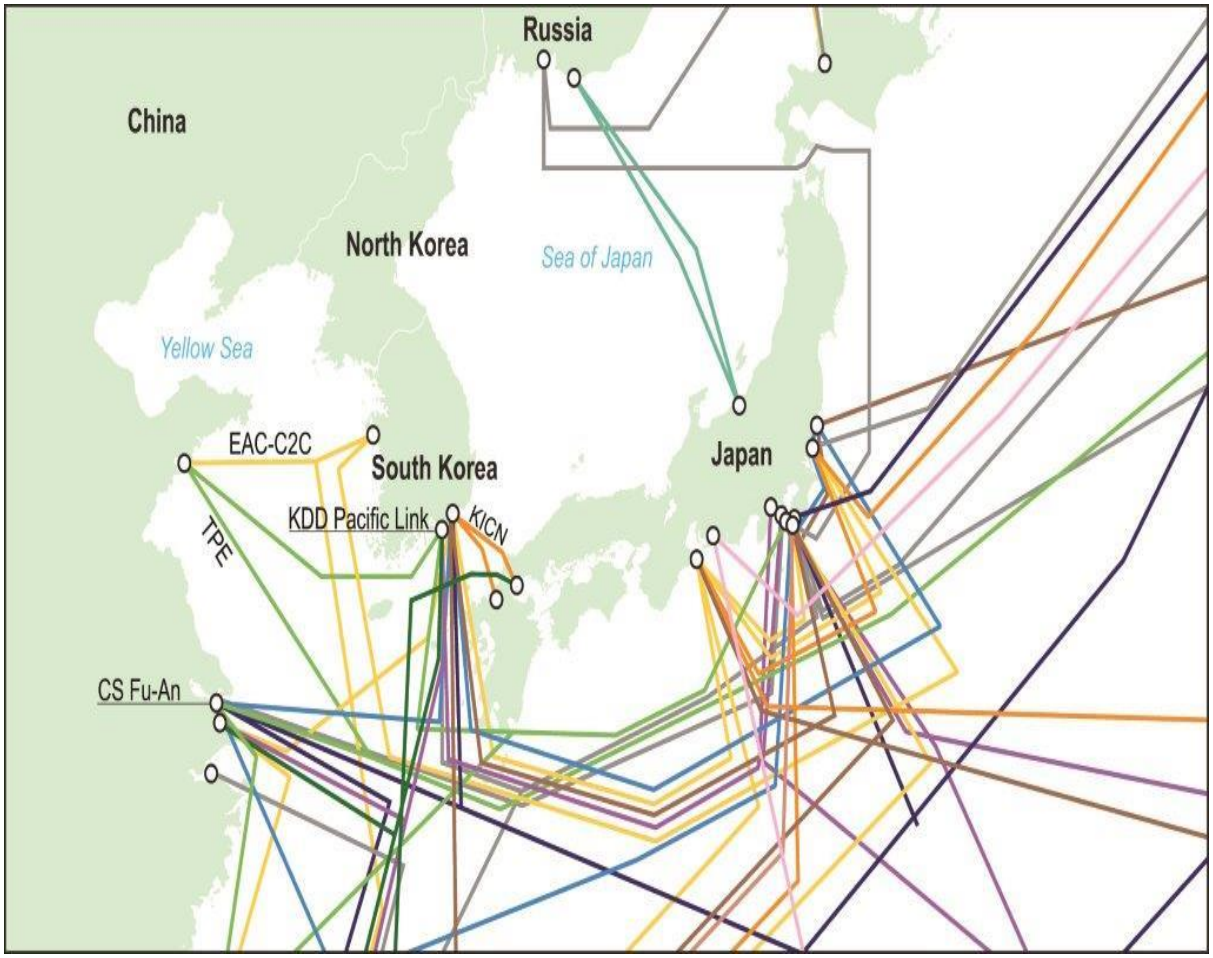
Regions	Country of origin					
	Portugal		Poland		Romania	
	Number of migrants	Percentage of total migrants	Number of migrants	Percentage of total migrants	Number of migrants	Percentage of total migrants
Neath Port Talbot	17	3.1%	287	7.8%	38	11.9%
Bridgend	30	5.4%	777	21.2%	52	16.3%
Rhondda Cynon Taf	100	18.1%	531	14.5%	37	11.6%
Merthyr Tydfil	293	53.1%	1,016	27.7%	16	5.0%
Caerphilly	55	10.0%	376	10.3%	77	24.1%
Blaenau Gwent	35	6.3%	330	9.0%	28	8.8%
Torfaen	10	1.8%	127	3.5%	9	2.8%
Monmouthshire	12	2.2%	218	6.0%	63	19.7%
Regions	552	100%	3,662	100%	320	100%
Wales	**2316**		**18,023**		**1,495**	

Source: 2011 Census data http://www.walesruralobservatory.org.uk

5. (a) Use **Figure 2** to describe the distribution of Portuguese in the selected regions of Wales. [3]

(b) Examine how international migration can magnify economic differences between the UK and other countries [5]

Figure 3: Undersea data cable networks in the Asia-Pacific region, 2014



Source: adapted from: www.submarinecablemap

6. (a) Suggest how human factors may have affected the pattern of connectivity shown in **Figure 3** [5]

(b) Explain how physical factors influence the global distribution of seafloor cable data networks [4]

Either

7 Evaluate why some places are popular destinations for international migration flows. [18]

Or

8 Assess the effectiveness of strategies designed to tackle the problems caused by ocean pollution. [18]

Section C – 21st Century Challenges (synoptic exercise)

Answer question 9 ***or*** *question 10*

You are advised to refer to figures 5, 6, 7 and 8 and make the fullest possible use of examples in support of your answers.

Study **Figures 5, 6, 7 and 8**

Either

9. Describe and assess the severity of the different risks that cities increasingly face. [26]

Or

10. To what extent can large megacities be successfully managed to reduce their vulnerability to different risks? [26]

Figure 5: Major cities and earthquake risk

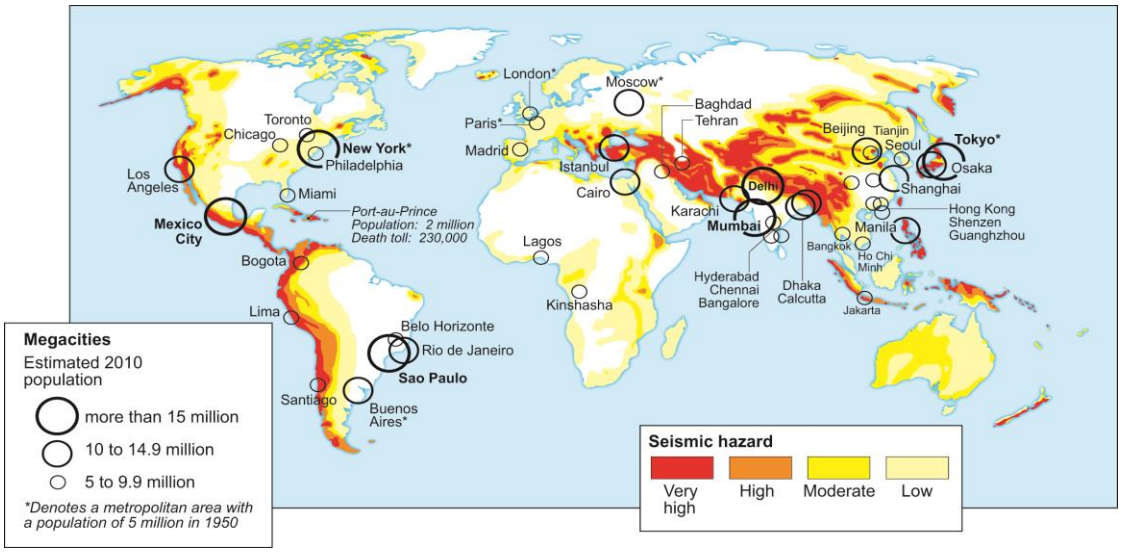


Figure 6: Tsunami warning zones

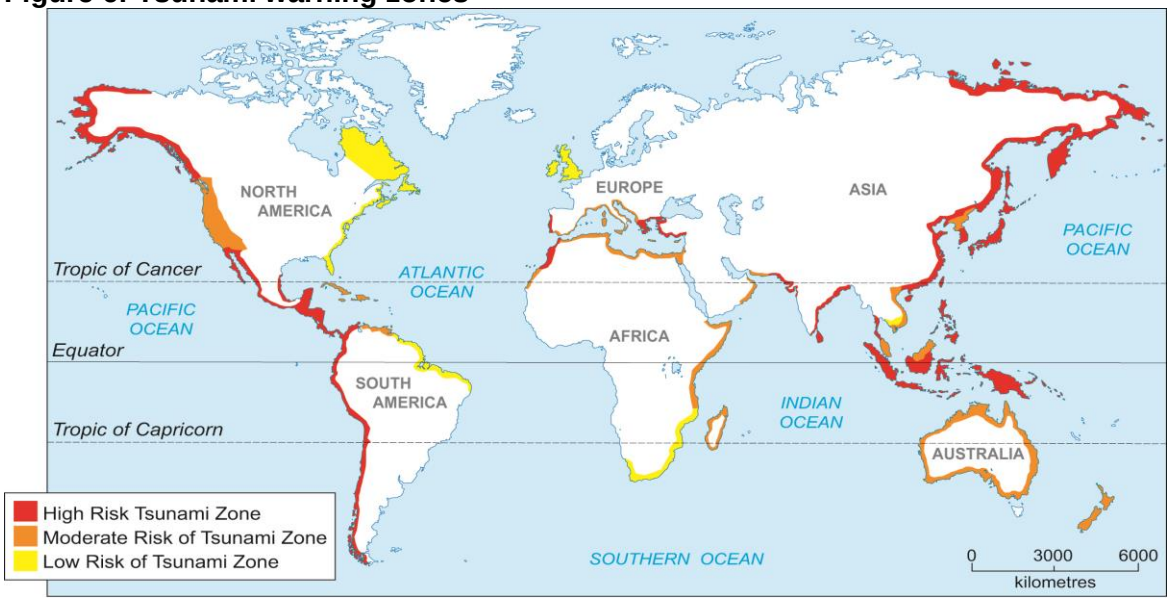
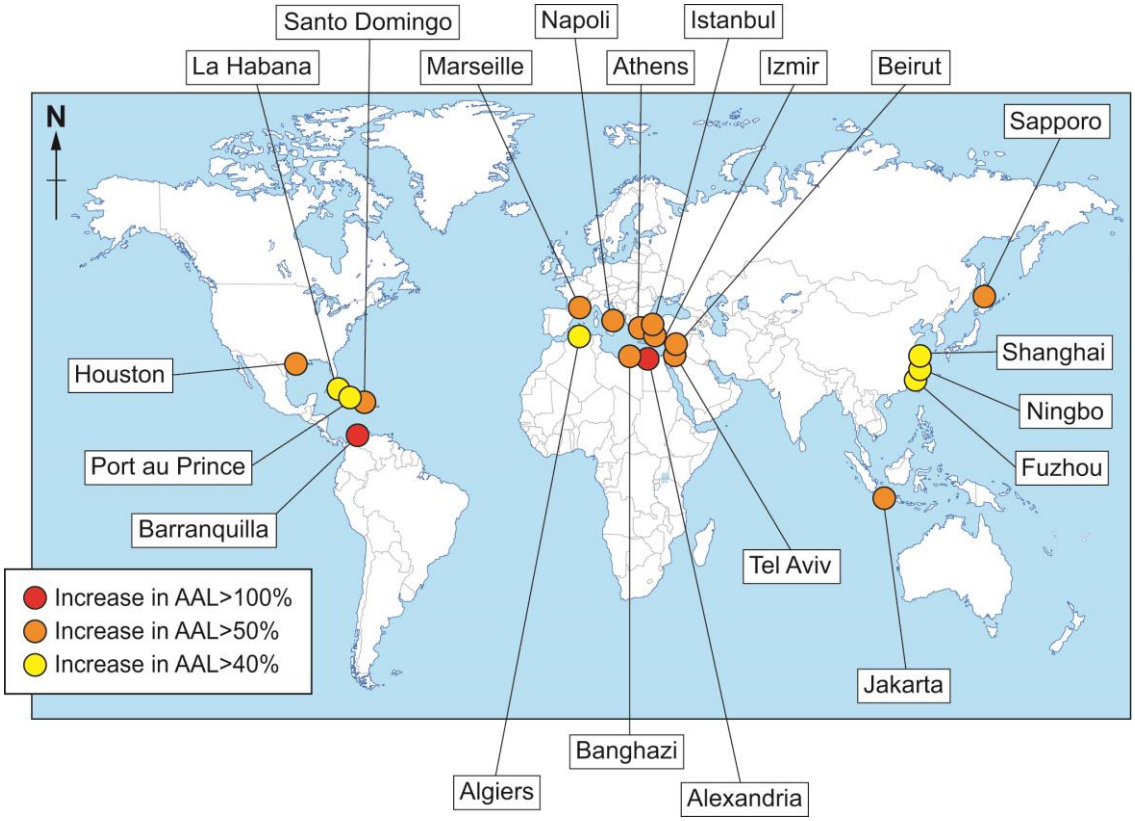
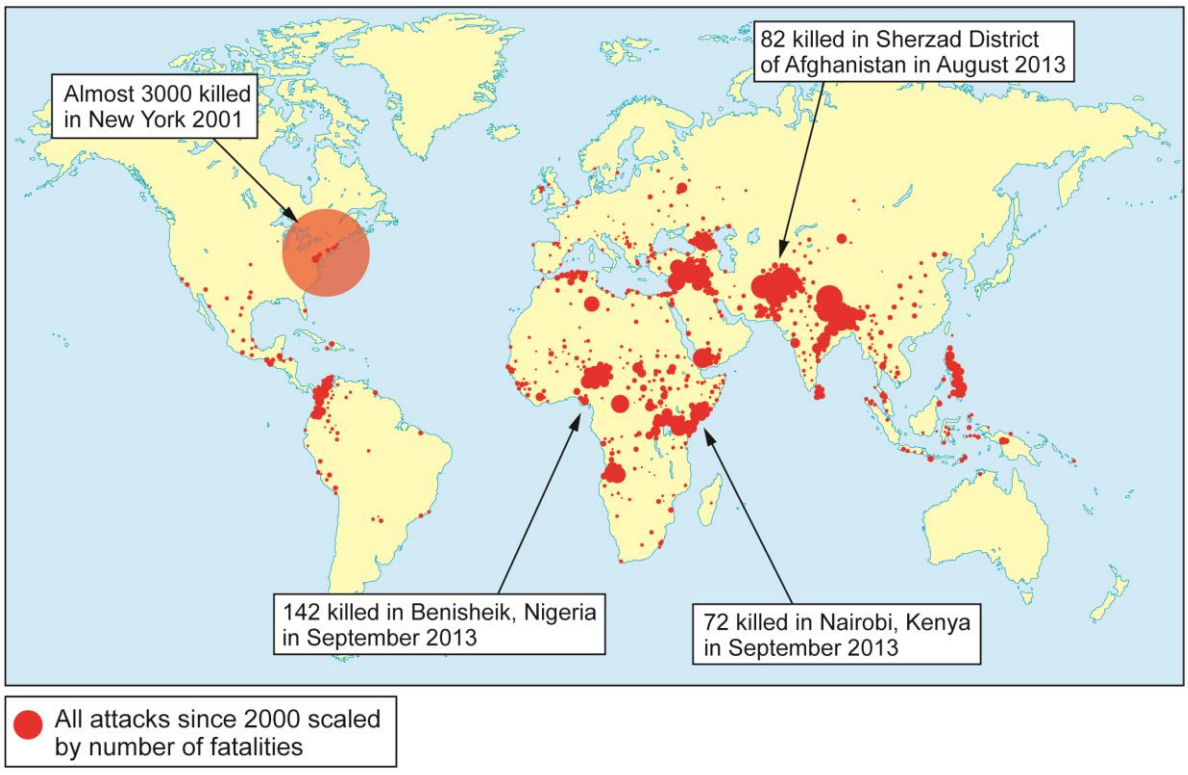


Figure 7: The 20 cities that face the biggest relative increase in average annual losses (AAL) in land area due to sea-level rise by 2050



Sources: adapted from: http://www.washingtonpost.com

Figure 8: Terrorist attacks worldwide 2000-2013



Source: adapted from: http://c3.thejournal.ie

Unit 3: Global Systems and Global Governance

Mark Scheme

Guidance for Examiners

Positive marking

It should be remembered that learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

The mark scheme for this unit includes both point-based mark schemes and banded mark schemes.

Point-based mark schemes

For questions that are objective or points-based the mark scheme should be applied precisely. Marks should be awarded as indicated and no further subdivision should be made. Each creditworthy response should be ticked in red ink. Do not use crosses to indicate answers that are incorrect. The targeted assessment objective (AO) is also indicated.

Banded mark schemes

For questions with mark bands the mark scheme is in two parts.

The first part is advice on the indicative content that suggests the range of concepts, processes, scales and environments that may be included in the learner's answers. These can be used to assess the quality of the learner's response.

The second part is an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1, AO2 and AO3, relevant to this unit. The targeted AO(s) are also indicated, for example AO2.1c.

<table>
<tr><th>Assessment Objective</th><th>Strands</th><th>Elements</th></tr>
<tr><td>AO1

Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.</td><td>N/A</td><td>This AO is a single element.</td></tr>
<tr><td rowspan="3">AO2

Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.</td><td rowspan="3">N/A</td><td>1a - Apply knowledge and understanding in different contexts to analyse geographical information and issues.</td></tr>
<tr><td>1b - Apply knowledge and understanding in different contexts to interpret geographical information and issues.</td></tr>
<tr><td>1c - Apply knowledge and understanding in different contexts to evaluate geographical information and issues</td></tr>
<tr><td rowspan="3">AO3

Use a variety of relevant quantitative, qualitative and fieldwork skills to:
• investigate geographical questions and issues
• interpret, analyse and evaluate data and evidence
• construct arguments and draw conclusions.</td><td>1 - investigate geographical questions and issues</td><td rowspan="3">N/A</td></tr>
<tr><td>2 - interpret, analyse and evaluate data and evidence</td></tr>
<tr><td>3 - construct arguments and draw conclusions</td></tr>
</table>

Banded mark schemes are divided so that each band has a relevant descriptor. The descriptor for the band provides a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

When deciding on a band, the answer should be viewed holistically. Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Banded mark schemes Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is also provided for banded mark schemes. Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The specialised concepts from the specification that apply in the indicative content are underlined.

The mark scheme reflects the layout of the examination paper. Mark questions 1 and 2 and either 3 or 4 in Section A plus questions 5 and 6 and either 7 or 8 in Section B. In Section C, mark either question 9 or 10. If the candidate has responded to all questions in either Section A, B or B, mark all these responses. Award higher marks attained; further possible rubric infringements will be discussed at the marking conference.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

Section A: Global Systems – Water and Carbon Cycles

Mark all questions in this section.

1. (a) Use Figure 1 to describe changes in the water content of the Sierra Nevada snowpack between 2005 and 2015.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following changes, up to a maximum of 3 marks						3	**3**

Indicative content

The question requires description of changes and comments need to be focused on this aspect of the resource and not on single points:

- overall decline from 2005 to 2015 (1 mark)
- fluctuation from 2005 to 2015 (1 mark)
- steepest decline from 2011 to 2012 (1 mark)
- constant decline from 2011 to 2015 significantly below average 2012–2015 compared to previous years (1 mark)
- increase from 2007 to 2008 / 2011 (1 mark)
- award 1 mark for quantification

Accept other valid descriptions of change.

1. (b) Outline how convection can lead to the formation of clouds.	AO1	AO2.1	AO2.1	AO2.1	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following changes, up to a maximum of 4 marks	4						**4**

Indicative content

The question requires a brief summary of the main characteristics of cloud formation that results from convection:

- sun begins to heat up the earth
- a thermal can form
- warm air has a tendency to rise
- as it rises, it will begin to expand and cool
- reaches the saturation point where the relative humidity is 100 percent and condensation starts to occur.
- when water condenses, it goes from a gas to a liquid forming cloud.

Accept other valid descriptions of change.

2. (a) Describe *two* carbon pathways between land and atmosphere.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for each correct pathway and up to 2 marks for development, up to a maximum of 5 marks	5						**5**

Indicative content

Allow 1 mark for identification of each correct pathway:

- main pathways are photosynthesis, respiration, decomposition, erupting volcanoes, weathering, natural burning, burning fossil fuels

Allow up to 2 marks for further description of the pathway which could include elements of:

- process, form of carbon, relative amounts

The response needs to address two pathways for maximum marks.
Credit other valid points.

2. (b) To what extent does deforestation cause changes to the size of carbon stores in *one* selected biome.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
				5			**5**

Indicative content

Answers can examine the increase or decrease of carbon stores in different elements of the selected biome and evaluate the extent to which deforestation causes changes.

- vegetation store is decreased
- depletion of soil store as less carbon is passed from vegetation
- increase in atmospheric store
- as timber is burnt, it increases the release of carbon dioxide
- Tree roots exposed and decompose leading to further carbon dioxide being released into the atmosphere
- Soil store reduced as top soil washed away due to soil erosion following deforestation

Answers need to give explanation of the changes in the context of sequestration, decomposition and other processes operating in the carbon cycle.
Credit other valid approaches.

3. Describe and evaluate how changes to stores within the drainage basin, such as snowpacks, have an impact on patterns of discharge.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	10			8			**18**

Indicative content

- Recognition of stores within the drainage basin – cyrospheric, vegetation, soil and groundwater, lakes
- Description of how and why stores change – seasonal changes, deforestation / afforestation, dams, changes to infiltration from human interventions
- Description of changes in patterns of discharge that result from changes in stores within the drainage basin – changes in volume of water, changes to pattern of flood hydrograph (flashy / steady responses), changes to regimes
- Explanation of how changes within drainage basin stores cause alterations in discharge patterns
- Description of changes that take place to drainage basin stores (systems)
- Exemplification of changes to stores and patterns of discharge
- Some explanation of how changes to stores result in impacts on patterns of discharge (causality)

Marking guidance

Near the upper end, answers that score well in interpretation AO2.1c (evaluate) will have developed linkage in terms of the processes operating in the drainage basin system. Answers may develop the concept of causality in relation to changes within drainage basin stores and their subsequent impacts on the elements of pattern with respect to discharge. Answers may reflect on how changes to vegetation impacts on the speed and volume of water passing through the drainage basin and the production of more flashy responses to the hydrograph. Changes in the water stored in snowpacks may impact on the volume of water in streams fed by snowmelt. At the lower end, there will be limited evaluation of changes within stores and limited comment on how these influence process and pattern.

Credit other valid approaches.

Award the marks as follows:

	AO1 [10 marks]	**AO2.1c [8 marks]**
	Knowledge and understanding of stores, and changes within stores in the drainage basin. Knowledge and understanding of patterns of discharge	*Applies AO2.1c to evaluate through suggesting how changes within stores can have an impact upon processes operating in the drainage basin and patterns of discharge*
Band		
3	7-10 marks Mostly accurate knowledge and understanding of stores and patterns of discharge Developed exemplification Well-annotated sketches / diagrams may be used Spelling, punctuation and grammar used with a high degree of accuracy	6-8 marks Well-developed and structured suggestions of how the identified changes in stores can lead to changes in process and discharge patterns
2	4-6 marks Partial knowledge and understanding of stores and patterns of discharge Generalised exemplification Simple sketches / diagrams may be used Spelling, punctuation and grammar used with a reasonable degree of accuracy	4-5 marks Partial or unbalanced suggestions of how the identified changes in stores can lead to changes in process and discharge patterns
1	1-3 marks Limited knowledge and understanding of stores and patterns of discharge Limited exemplification Basic sketches / diagrams may be used Spelling, punctuation and grammar used with limited accuracy	1-3 marks Limited suggestions of the how the identified changes in stores can lead to changes in process and discharge patterns
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

4. Describe and evaluate the impacts of recent increases in the atmospheric carbon store on the oceans.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	10			8			**18**

Indicative content

- Detailed description of how increased carbon has an impact on processes operating within the ocean – increased absorption of CO_2 results in decline in pH and ocean acidification
- Possible impacts on calcareous organisms, such as coral (organisms that have low tolerance to changes in pH) are less able to build shells
- Possible impacts on the food chain within oceans – biodiversity
- Possible positive impacts as some organisms (some phytoplankton and seagrasses) may benefit – this changes composition of ocean communities
- Possible socio-economic impacts – impacts on fishing and tourism
- description of changes to oceans due to increased carbon in atmosphere (causality)
- exemplification of impacts (equilibrium)
- some explanation of how increased carbon can lead to impacts on environment and / or people (risk)

Near the upper end, answers that score well in AO2.1c will have an evaluation of the impacts of increased carbon – magnitude of impact, positive / negative, relative impact on different aspects of oceans and should have developed linkage in terms of the processes operating and the impacts with comment on relative impact or magnitude. At the lower end, there will be limited evaluation of a limited number of impacts with little reference to assessment.
Credit other valid approaches.

Award the marks as follows:

	AO1 [10 marks]	**AO2.1c [8 marks]**
	Knowledge and understanding of ways increased levels of CO_2 can impact on the oceans	*Applies AO2.1c to appraise / judge through evaluating how far increased levels of CO_2 can impact on the oceans*
Band		
3	7-10 marks Mostly accurate knowledge and understanding of how increased atmospheric carbon impacts on oceans and ocean systems Developed exemplification Well-annotated sketches / diagrams may be used Spelling, punctuation and grammar used with a high degree of accuracy	6-8 marks Well-developed and structured evaluation of how increased atmospheric carbon impacts on oceans and ocean systems
2	4-6 marks Partial knowledge and understanding of increased levels of how increased atmospheric carbon impacts on oceans and ocean systems Generalised exemplification Simple sketches / diagrams may be used Spelling, punctuation and grammar used with a reasonable degree of accuracy	4-5 marks Partial or unbalanced evaluation of how increased atmospheric carbon impacts on oceans and ocean systems; some structure
1	1-3 marks Limited knowledge and understanding of increased levels of how increased atmospheric carbon impacts on oceans and ocean systems Limited exemplification Basic sketches / diagrams may be used Spelling, punctuation and grammar used with limited accuracy	1-3 marks Limited evaluation of how increased atmospheric carbon impacts on oceans and ocean systems
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section B: Global Change and Challenges

Mark all questions in this section.

5. (a) Use *Figure 2* to describe the distribution of Portuguese migrants in the selected regions of Wales. Include relevant figures in your answer.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 3 marks; reserve 1 mark for quantification						3	**3**

Indicative content

- Most of the regions are home to a small proportion/number of total migrants (1 mark)
- Merthyr stands out as an outlier / anomaly compared with the majority of the distribution (1 mark)
- Almost three-quarters of the population are in just two areas, Merthyr and Rhondda (1 mark)
- The values range from 293/53% in Merthyr to just 10/1.8% in Torfaen (1 mark) – quantification

Credit other valid points.

5. (b) Explain how international migration can magnify economic differences between the UK and other countries.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 5 mark	5						**5**

Indicative content

- Loss of large numbers of working age adults may reduce a source county's economic output (1 mark)
- In contrast the host country may see overall output increase, exacerbating differences (1 mark)
- The effect is pronounced when highly-skilled individuals leave / 'brain drain' (1 mark)
- Feedback effect of fewer consumers for services further affects source economy (1 mark)
- Feedback effect of supply chain / cluster disintegration in faltering sectors (1 mark)
- Remittances may partly offset losses but not enough to stop the gap from widening (1 mark)

Credit other valid points. Maximum 4 marks for responses that list costs and benefits but do not address the potential exacerbation of the difference / gap between nations.

6. (a) Suggest how human factors may have affected the pattern of connectivity shown in *Figure 3*.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 5 marks			5				**5**

Indicative content

- Early economic development / developed country status of Japan / South Korea has resulted in a large communications market (1 mark)
- China has emerged as a market / superpower only recently and is less connected (1 mark)
- Political factors play a role in the isolation of North Korea and to some extent China (1 mark)
- Settlement of people in core areas / cities explains national network patterns (1 mark)
- Distribution patterns are sometimes affected by marine protected areas / ocean governance (1 mark)
- Geopolitical between countries e.g. Russia-Japan may affect cable provision (1 mark)

Credit other valid suggestions of human factors affecting network and hub growth in this region. Do not credit descriptions of *Figure 3* that lack and suggestion of human factors.

6. (b) Explain how physical factors influence the global distribution of seafloor cable data networks.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
Award 1 mark for any of the following up to a maximum of 4 marks	4						**4**

Indicative content

- Avoidance of areas with a significant tsunami or undersea landslides risk (1 mark)
- Problems associated with subduction zones (no cables north of Japan) (1 mark)
- Concentration of cabling through narrow straits / canals e.g. Suez (1 mark)
- Cables may not be present in extremely deep water (1 mark)

Credit other significant points focused on physical factors affecting the distribution.

7. Evaluate why some places are popular destinations for international migration flows.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	10			8			**18**

Indicative content

Destinations may include entire states (UK, USA, Qatar) or specific cities (London, Paris) or even specific small towns and rural areas. Possible themes include:

- centrality of some countries to contemporary globalisation, or their past importance in the context of European Empires (thus Commonwealth English-speaking migrants may look to UK; French speakers migrate to Paris)
- economic opportunities of world cities (eg construction industry boom in Qatar; global entertainment hubs / cores eg Los Angeles and Hollywood, Mumbai and Bollywood)
- Presence of established diaspora communities that continue to attract / pull / interact with new migrants, even in some rural places and small towns (eg Portuguese community in Merthyr Tydfil)
- Real or perceived positive attitudes towards refugees and asylum seekers

Marking guidance

Near the upper end, answers that score well at AO2.1c will evaluate the statement by applying the concepts of place and scale (examining how a 'place' could be a country or a city), or may examine what the basis for 'popularity' is by adopting an economic, social, cultural and political causal framework. The UK / London's present-day role as a core for past and present global economic systems could be examined. Another approach might be to examine how core destinations have been represented or perceived (as opposed to reality) and how this could affect migration. Near the lower end, there will be limited evaluation as to why some places are popular destinations and unlikely to uncover assumptions in the question.

Credit other valid approaches

Award the marks as follows:

	AO1 [10 marks]	**AO2.1c [8 marks]**
	Demonstrates knowledge and understanding of global migration flows	*Applies (AO2.1c) to appraise / judge through evaluation of different places and contexts, and levels of popularity*
Band		
3	8-10 marks Mostly accurate knowledge and understanding of a range of global migration flows Detailed exemplification Spelling, punctuation and grammar used with a high degree of accuracy	7-8 marks Well-developed and structured evaluation of why some places are popular destinations; likely to apply scale or other concepts to provide structure
2	4-7 marks Partial knowledge and understanding of global migration flows Generalised exemplification Spelling, punctuation and grammar used with a reasonable degree of accuracy	4-6 marks Partial or unbalanced evaluation of why some places are popular destinations; some structure
1	1-3 marks Limited knowledge and understanding of global migration flows Limited exemplification Spelling, punctuation and grammar used with limited accuracy	1-3 mark Limited evaluation of why some places are popular destinations
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

8. Describe and assess the effectiveness of strategies designed to tackle the problems caused by ocean pollution.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	10			8			**18**

Indicative content

Ocean pollution may include oil spillages, solid / plastic wastes and chemical waste / run-off. These problems incorporate a range of harmful environmental impacts, against which effectiveness of governance strategies should be judged. Possible themes include:

- Regulations intended to prevent / minimise oil spills, especially in the wake of Gulf of Mexico spill
- Water quality controls, such as E.U. rules, to prevent solid / chemical waste entering oceans
- Global rules governing the disposal of radioactive waste
- Top-down attempts to tackle the volume of plastic pollution destined for oceans, such as reduced packaging (introduced by companies), recycling facilities (governments) etc.
- Local initiatives such as beach clean-ups, or attempts to raise awareness about the issues

Marking guidance

Near the upper end, answers that score highly at AO2.1c will systematically examine mitigation (less waste entering the oceans) and adaptation (clean-up operations) strategies. Concepts of <u>place</u> and <u>scale</u> could be applied when examining how the worst-affected places may not always be able to adopt effective mitigation measures because the pollution comes from other places. Equally, local actions will always be limited in scale. Another approach might be a <u>systems</u> examination which recognises that although future pollution inputs might be reduced, there is already an enormous store of non-bio-degradable plastic waste in the oceans that cannot easily be tackled. Near the lower end, there will be limited assessment of strategies and is unlikely to uncover any assumptions in the question.
Credit other valid approaches.

Award the marks as follows:

	AO1 [10 marks]	**AO2.1c [8 marks]**
	Knowledge and understanding of ocean pollution problems & strategies	*Applied examination of management effectiveness*
Band		
3	8-10 marks Mostly accurate knowledge and understanding of ocean pollution problems Detailed exemplification of management strategies Spelling, punctuation and grammar used with a high degree of accuracy	7-8 marks Well-developed and structured examination of the effectiveness of strategies (may examine different scales or perspectives)
2	4-7 marks Partial knowledge and understanding of ocean pollution problems Generalised exemplification of management strategies Spelling, punctuation and grammar used with a reasonable degree of accuracy	4-6 marks Partial or unbalanced examination of the effectiveness of strategies; some structure
1	1-3 marks Limited knowledge and understanding of ocean pollution problems Limited exemplification of management strategies. Spelling, punctuation and grammar used with limited accuracy	1-3 marks Limited examination of the effectiveness of strategies
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section C – 21st Century Challenges (synoptic exercise)

Mark either question 9 or 10.

9. Describe and assess the severity of the different risks that cities increasingly face.	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	10			10		6	**26**

Indicative Content

AO3 skills include:

- Analysis of Figures 5, 6, 7 and 8 in order to map varying physical risks and their geographies
- Analysis of existence of multiple risk 'hot spots' and varying magnitudes of risk in the Figures
- Exemplification of significant and/or anomalous risks / cities shown in the Figures

AO1 knowledge and understanding includes:

- Description of own examples of past hazard events and risks, such as earthquakes in Haiti
- Some explanation of the varying nature / severity of the risks shown, such as sea level rise
- Description and explanation of additional factors / risks not shown e. population growth, Ebola
- Exemplification using knowledge and understanding of individual case studies

AO2.1c assessment includes:

- the severity of different categories risks for different kinds of urban place
- takes into account varying projections for increasing physical risks
- takes into account different scenarios for future urban growth and resilience

Marking guidance

'Assess' requires candidates progress beyond explaining risks. At the upper end, answers that score highly at AO2.1c will show application of knowledge and understanding by assessing uncertain, interlinked risks, synthesising information, and coming to rational conclusions which highlight underlying assumptions of the statement (such as rate of change of sea-level rise, urban population growth, or both). Responses in the middle range should show some application of knowledge and understanding to provide some assessment and synthesis, prior to drawing partially supported conclusions. At the lower end responses provide very limited application of knowledge and understanding of risks to provide little assessment.

Credit other valid approaches.

Award the marks as follows:

	AO3 [6 marks]	**AO1 [10 marks]**	**AO2.1c [10 marks]**
	Applies AO3 to analyse the distribution of risks to cities shown in Figures 5-8	*Knowledge and understanding of risks to cities in Figures 5-8, and any additional risks*	*Applies AO2.1c to assess the increasing severity of risks for different cities*
Band			
3	5-6 marks Well-developed analysis of the risks shown in Figures 5-8 Detailed use of data Well-annotated sketches / diagrams may be used Spelling, punctuation and grammar used with a high degree of accuracy	8-10 marks Mostly accurate knowledge and understanding of a wide range of risks for cities Developed exemplification	8-10 marks Well-developed and structured assessment of the increasing severity of different risks

2	3-4 marks Partial or unbalanced analysis of the risks in Figures 5-8 Generalised use of data Simple sketches / diagrams may be used Spelling, punctuation and grammar used with a reasonable degree of accuracy	4-7 marks Partial knowledge and understanding of a range of risks for cities Generalised knowledge of examples	4-7 marks Partial or unbalanced assessment of the increasing severity of different risks; some structure
1	1-2 marks Limited analysis of the risks shown in Figures 5-8 Limited or no use of data Basic sketches / diagrams may be used Spelling, punctuation and grammar used with limited accuracy	1-3 marks Limited knowledge and understanding of some risks Limited exemplification	1-3 marks Limited assessment of the increasing severity of different risks
	0 marks Response not creditworthy or not attempted		

10. To what extent can large megacities be successfully managed to reduce their vulnerability to different risks?	AO1	AO2.1a	AO2.1b	AO2.1c	AO3.1	AO3.2	**Total**
	10			10		6	**26**

Indicative Content

AO3 skills include:

- Analysis of Figures 5, 6, 7 and 8 in order to map varying physical risks for megacities
- Analysis of existence of multiple risk 'hot spots' and varying magnitudes of risk in the Figures
- Exemplification of significant and / or anomalous megacities shown in the Figures

AO1knowledge and understanding includes:

- Description of own examples of risk management in different urban contexts
- Some explanation of different risks and the management challenges they bring
- Description and explanation of additional factors / risks not shown eg population growth, Ebola
- Exemplification using knowledge and understanding of individual case studies

AO2.1c assessment includes:

- the likely success of different strategies eg reinforced buildings, passport controls
- takes into account varying population growth rates / escalation of vulnerability
- that takes into account different local contexts and global scenarios e.g. climate change

Marking guidance

'Assess' requires candidates progress beyond explaining management strategies. At the upper end, answers that score highly at AO2.1c should show application of knowledge and understanding by assessing uncertain, interlinked risks, synthesising information, and coming to rational conclusions which highlight underlying assumptions of the statement (such as the varied stages of growth of different megacities, or their varied geographical contexts). Responses in the middle range should show some application of knowledge and understanding to provide some assessment and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of risks and vulnerability to provide little or no assessment.

Credit other valid approaches.

Award the marks as follows:

	AO3 [6 marks]	**AO1 [10 marks]**	**AO2.1c [10 marks]**
	Applies AO3 to analyse the distribution of risks to megacities shown in Figures 5-8	*Knowledge and understanding of managing risks in Figures 5-8, and any additional risks*	*Applies AO2.1c to assess the likely success of risk management in different megacities*
Band			
3	5-6 marks Well-developed analysis of the risks and megacities in Figures 5-8 Detailed use of data Well-annotated sketches / diagrams may be used Spelling, punctuation and grammar used with a high degree of accuracy	8-10 marks Mostly accurate knowledge and understanding of managing a wide range of risks Developed exemplification	8-10 marks Well-developed and structured assessment of the likely success of managing different risks

2	3-4 marks Partial or unbalanced analysis of risks and megacities in Figures 5-8 Generalised use of data Simple sketches / diagrams may be used Spelling, punctuation and grammar used with a reasonable degree of accuracy	4-7 marks Partial knowledge and understanding of managing a range of risks Generalised knowledge of examples	4-7 marks Partial or unbalanced assessment of the likely success of managing different risks; some structure
1	1-2 marks Limited analysis of the risks and megacities in Figures 5-8 Limited or no use of data Basic sketches / diagrams may be used Spelling, punctuation and grammar used with limited accuracy	1-3 marks Limited knowledge and understanding of managing some risks Limited exemplification	1-3 marks Limited assessment of the likely success of managing different risks
	0 marks Response not creditworthy or not attempted		

A LEVEL GEOGRAPHY

UNIT 4

CONTEMPORARY THEMES IN GEOGRAPHY

SAMPLE ASSESSMENT MATERIALS

2 hours

ADDITIONAL MATERIALS

In addition to this examination paper, you will need **one** 12 page answer book.

INSTRUCTIONS TO CANDIDATES

Answer **one** question in Section A.

Answer **two** questions in Section B, **one** only from each of your two selected themes.

Use black ink or black ball-point pen.

Write your answers in the separate answer book provided.

Write your name, centre number and candidate number in the spaces at the top of the answer book.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question.

This paper requires that you make the fullest possible use of appropriate examples and specialised concepts in support of your answers. Sketch maps and diagrams should be included where relevant.

Unit 4 – Contemporary Themes in Geography

Make the fullest possible use of examples in support of your answers.

Section A

*Answer **one** question.*

Theme 1: Tectonic Hazards

1. Analyse why processes associated with earthquake activity often result in hazards. [20]

OR

2. Analyse why the impacts of volcanic activity vary. [20]

Section B

Answer **two** questions, **one** from each of your two selected themes.

Theme 2: Ecosystems

3. Assess the importance of ecosystems as providers of goods and services. [22]

OR

4. Assess the role played by soil development in succession in one ecosystem. [22]

Theme 3: Economic Growth and Challenge: India or China or Development in Sub-Saharan Africa

India

5. Examine the role of government in the location and development of economic activity in India. [22]

OR

6. Assess the success of strategies implemented in India to manage **one** environmental problem associated with economic growth. [22]

China

7. Examine the role of government in the location and development of economic activity in China. [22]

OR

8. Assess the success of strategies implemented in China to manage **one** environmental problem associated with economic growth. [22]

OR

Development in Sub-Saharan Africa

9. 'Physical factors provide more constraints than opportunities for development.' Discuss with reference to two or more Sub-Saharan African countries. [22]

OR

10. Assess the success of strategies implemented in selected Sub-Saharan African countries to address the consequences of desertification. [22]

Theme 4: Energy Challenges and Dilemmas

11. 'Global patterns of energy demand are influenced mainly by economic factors.' To what extent do you agree? [22]

OR

12. 'The technological problems associated with alternative energy sources are greater than the environmental problems associated with fossil fuels.' Discuss. [22]

Theme 5: Weather and Climate

13. To what extent can the damaging effects of high-pressure systems be minimised? [22]

OR

14. 'It is easier to adapt to climate change than to mitigate against it.' To what extent do you agree? [22]

Unit 4: Contemporary Themes in Geography

Mark Scheme

Guidance for Examiners

Positive marking

Learners are writing under examination conditions and credit should be given for what the learner writes, as opposed to adopting an approach of penalising him/her for any omissions. It should be possible for a very good response to achieve full marks and a very poor one to achieve zero marks. Marks should not be deducted for a less than perfect answer if it satisfies the criteria of the mark scheme.

The mark scheme for this unit uses banded mark schemes.

Banded mark schemes

The mark scheme is in two parts to reflect the sections (A and B) in the examination paper. Section A is 20 marks and Section B is 22 marks.

The first part of the mark scheme in each section is an assessment grid advising on bands and the associated marks that should be given in responses that demonstrate the qualities needed in the three AOs, AO1 AO2 and AO3 relevant to this unit. The targeted AO(s) are also indicated, for example AO2.1c.

Assessment Objective	Strands	Elements
AO1 Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change, at a variety of scales.	N/A	This AO is a single element.
AO2 Apply knowledge and understanding in different contexts to interpret, analyse and evaluate geographical information and issues.	N/A	1a - Apply knowledge and understanding in different contexts to analyse geographical information and issues.
		1b - Apply knowledge and understanding in different contexts to interpret geographical information and issues.
		1c - Apply knowledge and understanding in different contexts to evaluate geographical information and issues
AO3 Use a variety of relevant quantitative, qualitative and fieldwork skills to: • investigate geographical questions and issues • interpret, analyse and evaluate data and evidence • construct arguments and draw conclusions.	1 - investigate geographical questions and issues	N/A
	2 - interpret, analyse and evaluate data and evidence	
	3 - construct arguments and draw conclusions	

The second part of the mark scheme is advice on the indicative content that suggests the range of likely themes and specialised concepts, processes, scales and environments that may be included in the learner's answers. This is followed by marking guidance which should be used to assess the quality of the learner's response.

Banded mark schemes are divided so that each band has a relevant descriptor. These provide a description of the performance level for that band. Each band contains marks. Examiners should first read and annotate a learner's answer to pick out the evidence that is being assessed in that question. Once the annotation is complete, the mark scheme can be applied. This is done as a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

When deciding on a band, the answer should be viewed holistically. Beginning at the lowest band, examiners should look at the learner's answer and check whether it matches the descriptor for that band. Examiners should look at the descriptor for that band and see if it matches the qualities shown in the learner's answer. If the descriptor at the lowest band is satisfied, examiners should move up to the next band and repeat this process for each band until the descriptor matches the answer.

If an answer covers different aspects of different bands within the mark scheme, a 'best fit' approach should be adopted to decide on the band and then the learner's response should be used to decide on the mark within the band. For instance if a response is mainly in band 2 but with a limited amount of band 3 content, the answer would be placed in band 2, but the mark awarded would be close to the top of band 2 as a result of the band 3 content.

Examiners should not seek to mark candidates down as a result of small omissions in minor areas of an answer.

Banded mark schemes Stage 2 – Deciding on the mark

Once the band has been decided, examiners can then assign a mark. During standardising (marking conference), detailed advice from the Principal Examiner on the qualities of each mark band will be given. Examiners will then receive examples of answers in each mark band that have been awarded a mark by the Principal Examiner. Examiners should mark the examples and compare their marks with those of the Principal Examiner.

When marking, examiners can use these examples to decide whether a learner's response is of a superior, inferior or comparable standard to the example. Examiners are reminded of the need to revisit the answer as they apply the mark scheme in order to confirm that the band and the mark allocated is appropriate to the response provided.

Indicative content is also provided for banded mark schemes. Indicative content is not exhaustive, and any other valid points must be credited. In order to reach the highest bands of the mark scheme a learner need not cover all of the points mentioned in the indicative content but must meet the requirements of the highest mark band. Where a response is not creditworthy, that is contains nothing of any significance to the mark scheme, or where no response has been provided, no marks should be awarded.

The specialised concepts from the specification that apply in the indicative content are underlined.

The mark scheme reflects the layout of the examination paper. Mark the chosen question in section A and the two chosen questions from Section B. If the candidate has responded to both questions in Section A or more than two in Section B mark all the answers. Award the higher marks attained for the correct number of required questions; further possible rubric infringements will be discussed at the marking conference.

Be prepared to reward answers that give **valid and creditworthy** responses, especially if these do not fully reflect the 'indicative content' of the mark scheme.

Contemporary themes in Geography– Section A Tectonics: Generic mark bands (20 marks)

	AO1 [6 marks]	**AO2 [13 marks]**	**AO3 [1 marks]**
Band	*Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change at a variety of scales*	*Apply knowledge and understanding in different contexts either to analyse or interpret or evaluate geographical issues and information*	*Use a variety of relevant 'geographical skills' to construct arguments and draw conclusions*
3	5-6 marks Secure factual knowledge and confident understanding of relevant concepts and principles Developed exemplification used with supporting geographical terminology Well-directed and well-annotated sketch maps / diagrams Spelling, punctuation and grammar used with a high degree of accuracy	9-13 marks Accurate application either to interpret or analyse or evaluate Synthesis of the connections between different elements of the response to the question Relevant application of the specialised concepts	1 mark The response is appropriately structured
2	3-4 marks Straightforward knowledge with some inaccuracies; some understanding of relevant concepts and principles Appropriate exemplification and geographical terminology is partially evident Annotated sketch maps / diagrams contain inaccuracies Spelling, punctuation and grammar used with a reasonable degree of accuracy	5-8 marks Some application either to interpret or analyse or evaluate with limited range, depth and development Incomplete synthesis between different elements of the response to the question	
1	1-2 marks Limited knowledge with errors and minimal understanding Limited use of examples and terminology; no supporting sketch maps / diagrams Spelling, punctuation and grammar used with limited accuracy	1-4 marks Application either to interpret or analyse or evaluate is poor; occasional relevant points are made	
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

Section A: Tectonic Hazards

1. Analyse why processes associated with earthquake activity often result in hazards.
[20 marks]
AO1 [6] AO2.1.a [13] AO3.3 [1]

Focus: 3.1.3
Indicative content

Likely themes and specialised concepts include:

- definition of what constitutes a hazard (risk)
- primary hazards include ground moving and shaking (risk)
- secondary hazards include liquefaction, landslides, tsunami, fire and diseases (risk)
- the connections between the processes operative at tectonic plate boundaries and causes of earthquake hazards (risks). Two plates driven by convection currents in the Earth's mantle grind past one another. Friction causes stress and strain energy to build up, and when a critical point (threshold) is reached an earthquake occurs (causality)
- an example of a primary hazard is ground moving and shaking. Surface seismic waves (long waves) are the ones which shake the ground causing buildings and other structures to collapse. Underground pipes and power lines can be damaged by ground movement leading to fires and explosions. Near the epicentre (ie directly above the earthquake focus) all the waves arrive at once and so cause the most severe and complex ground motion (causality)
- different ground materials react in different ways to the shaking, so the amount of damage varies with rock type. Soils with a high water content act to amplify the shaking, causing it to essentially act like a liquid (liquefaction), taking away the support of buildings and other structures (causality) destroying life and property
- when an earthquake occurs under the ocean its seismic energy can dissipate as shockwaves through the ocean water and this can cause tsunami initiation. The movement of the sea bed upwards displaces billions of tonnes of water above it, some sea floor falls and water rushes in to replace it. The uplifted water collapses and rushes out radially outwards at a thousand km per hour. Tsunami waves themselves are not very high in the deep ocean (tens of cm) but when they approach land, they can become tens of metres, and be very destructive. They also travel very fast in the deep ocean, but when they get to shallower waters they slow down. Tsunami are often preceded by a drawdown of water that exposes the sea bed of the foreshore (causality)
- the characteristics of earthquake activity: magnitude, predictability, frequency,
- human factors affecting spatial variations in vulnerability (place)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section A)

The command word 'analyse' (AO2.1a) requires that candidates bring out the essential elements or structure about why processes associated with earthquake activity often result in hazards. At the upper end, answers that score highly should show application of knowledge and understanding by finding connections and causes and effects as well as deconstructing concepts, information and issues about why processes associated with earthquake activity often result in hazards. Responses in the middle range should show some application of knowledge and understanding to find some connections and causes and effects as well as deconstructing some concepts, information and issues. Lower end responses provide very limited application of knowledge and understanding of tectonic hazards to provide few connections, causes and effects.

2. Analyse why the impacts of volcanic activity vary. [20 marks]

AO1 [6] AO2.1a [13] AO3.3 [1]

Focus: 3.1.2/4
Indicative content

There are a variety of impacts of volcanic activity at the local scale (risks).
Likely themes and specialised concepts include:

- Volcanic processes and the production of associated hazards (causality) (risk)
- environmental impacts (eg damage to the built environment, landslides)
- demographic impacts (eg deaths, migration)
- economic impacts (eg disruption to production)
- social impacts (eg homelessness, injury, bereavement)
- primary and secondary effects
- local, regional and global impacts (scale)
- the characteristics of the volcanic activity that influence its impact
- its magnitude (as measured by Volcanic Explosivity Index), predictability, frequency, duration, speed of onset, timing and areal extent (risk)
- economic factors affecting spatial variations in vulnerability
  in terms of the level of development and level of technology (influencing resilience, mitigation and adaption)
- social factors affecting spatial variations in vulnerability in terms of the population profile (age, gender, level of education)
- political factors affecting spatial variations in vulnerability in terms of the quality of governance
- geographical factors affecting spatial variations in vulnerability in terms of rural / urban location and degree of isolation (place)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section A)

The command word 'analyse' (AO2.1a) requires that candidates bring out the essential elements or structure about why the impacts of volcanic activity vary. At the upper end, answers that score highly should show application of knowledge and understanding by finding connections and causes and effects as well as deconstructing concepts, information and issues about why the impacts of volcanic activity vary. Responses in the middle range should show some application of knowledge and understanding to find some connections and causes and effects as well as deconstructing some concepts, information and issues. Lower end responses provide very limited application of knowledge and understanding of tectonic hazards to provide few connections and causes.

Section B: Contemporary Themes in Geography: Generic Mark Bands (22 marks)

	AO1 [9 marks]	**AO2 [11 marks]**	**AO3 [2 marks]**
Band	*Demonstrate knowledge and understanding of places, environments, concepts, processes, interactions and change at a variety of scales*	*Apply knowledge and understanding in different contexts either to analyse or interpret or evaluate geographical issues and information*	*Use a variety of relevant 'geographical skills'* to construct arguments and communicate findings*
3	7-9 marks Wide-ranging and thorough knowledge and confident understanding of relevant concepts and principles Developed exemplification used with supporting geographical terminology Well-directed and well-annotated sketch maps / diagrams Spelling, punctuation and grammar used with a high degree of accuracy	8-11 marks Accurate application either to interpret or analyse or evaluate Synthesis of the connections between different elements of the response to the question Relevant application of the specialised concepts	2 marks A well-constructed, coherent and logical response
2	4-6 marks Secure, straightforward knowledge and reasonable understanding of relevant concepts and principles Appropriate exemplification and geographical terminology is partially evident Appropriate, basically accurate annotated sketch maps / diagrams are included Spelling, punctuation and grammar used with a reasonable degree of accuracy	5-7 marks Some application either to interpret or analyse or evaluate with limited range, depth and development Incomplete synthesis between different elements of the response to the question	1 mark The communication in the response is limited or incomplete
1	1-3 marks Limited knowledge with errors and minimal understanding Limited use of examples and terminology; no supporting sketch maps / diagrams Spelling, punctuation and grammar used with limited accuracy	1-4 marks Application either to analyse or interpret or evaluate is poor; occasional relevant points are made	
	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted	0 marks Response not creditworthy or not attempted

3. Assess the importance of ecosystems as providers of goods and services.

[22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus 3.2.1
Indicative content

Likely themes and specialised concepts include:

- Ecosystem goods are products that can be derived directly from the ecosystem eg timber from trees, water, food (and the nutrients derived from plants and animals) and medicines
- Ecosystem services are benefits that people obtain from ecosystems. These services result from the interactions among organisms and their natural environments eg purification of air and water, mitigation of floods and droughts, decomposition of wastes, pollination of crops and natural vegetation, control of potential agricultural pests, dispersal of seeds and translocation of nutrients, moderation of temperature extremes (resilience) and the provision of aesthetic beauty and intellectual stimulation
- it has been argued that human well-being depends on the services provided by ecosystems (*The UN Millennium Ecosystem Assessment*) (causality)
- ecosystem goods are generally easier to value in a monetary sense than services
- ecosystem goods and services offer direct economic benefits and support economic activity at a range of scales from local to global (scale)
- ecosystem goods and services offer a variety of benefits: recreational benefits eg fishing and hunting; 'neglected' benefits eg scientific value; 'existence legacy value' eg philanthropic value and intergeneration equity
- ecological goods are not only important, they are essential to our survival. Human life depends on the continuing capacity of the biosphere's ecosystems to provide a multitude of benefits (sustainability)
- the unsustainable use of ecosystem goods may destroy the realisable role of services and place humans at risk when the system loses equilibrium; because of their value it is extremely important to reduce the threat of irreversible damage to ecosystems (equilibrium) (thresholds)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'assess' (AO2.1c) requires that candidates weigh up the the value of ecosystems as providers of goods and services by giving a number of possible explanations / arguments / outcomes and justify which is/are favoured. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the value of ecosystems as providers of goods and services that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of ecosystems to provide few judgements.

4. Assess the role played by soil development in succession in *one* ecosystem.

[22 marks]

AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.2.5
Indicative content

Although ecosystems are largely self-regulating, they are subject to change, as illustrated by succession.

Likely themes and specialised concepts include:

- as plants colonise a 'sterile' area, such as bare rock or sand dunes they change the physical and chemical components of the environment making the way for a different range of organisms to colonise (causality)
- the colonisation by pioneer communities leads to the establishment of early colonisers (more advanced plants); once the early colonisers have established they also continue to change the environment in stages (seres)
- with the passage of time, the seral communities will become more complex and comprise larger plants, with each community helping to destroy that which precedes it (feedback)
- with each sere, soil and moisture conditions improve as humus is provided from the expanding plant cover and soil depth and the nutrient status of the soil increase
- given sufficient time, without interruption, the vegetation will come to comprise a wide range of plants fully adapted to the prevailing climatic conditions (climatic climax) with temperature and precipitation influencing the climatic climax vegetation (interdependence) (causality)
- the increasing diversity of plant species, increases in biomass and increase in vegetation height / density / canopy associated with succession is due to the development of the soil which increases in depth, organic content and associated nutrient status and has improved water retention properties (feedback)
- the protection afforded by established species will also aid succession
- the actual species involved in a succession in a particular area (place) are controlled by a range of factors including not only the climate, but also the geology and associated soil type as the mineral matter from the parent rock will influence nutrient availability and soil texture: the communities that occur on these soils may permanently differ from the surrounding climatic communities creating a subclimax community (causality)
- a subclimax occurs when the vegetation is prevented from reaching its climax due to interruptions by other local factors including relief and drainage (causality)
- when people are involved then secondary succession takes place. Secondary succession is more likely to occur on land on which the previous management has been discontinued eg abandoned farmland
- where human activity has permanently arrested and altered the natural succession and manages the resultant community the succession has achieved a deflected climax or plagioclimax eg deforestation (risk)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'assess' (AO2.1c) requires that candidates weigh up the the role played by soil development in succession in one ecosystem by giving a number of possible explanations / arguments / outcomes and justify which is/are favoured. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the role played by soil development in succession in one ecosystem that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of ecosystems to provide few judgements.

5. Examine the role of government in the location and development of economic activity in India. [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.3.4
Indicative content

The development of economic activity in India includes the development of manufacturing industries, service and financial industries and agriculture. Rapid economic growth in India has been due to the expansion of the service sector rather than to the growth of manufacturing. India's large service industry accounts for 57.2% of the country's GDP while the industrial and agricultural sectors contribute 28.6% and 14.6% respectively.

Likely themes and specialised concepts include:

- agribusiness plays an increasingly significant role in agricultural exports. They control much of the chain, from seeds and fertilisers to finance, distribution and marketing
- manufacturing includes the growth of modern steel, pharmaceuticals, textiles, clothing, and a substantial high-tech electronics sector eg mobile phones.
- the services sector, includes financial services, software services, accounting services and entertainment industries like Bollywood. The growth of service industries includes call centres, back office jobs, outsourcing from Europe / US
- locations of economic activity include rural areas such as Gujarat and the Punjab (agribusiness), SEZs (manufacturing), Bangalore (BPO), Mumbai (Bollywood) (place)
- India faced a major economic crisis in 1991 which forced the governing Congress Party to borrow money from the International Monetary Fund (IMF). This opened up the economy to economic globalisation. India is now among the ten fastest-growing economies in the world (causality)
- to attract larger foreign investments in India, the Special Economic Zones (SEZs) Policy was announced in April 2000 (causality) (globalisation)
- the National Highways Act has been modified to help reduce tolls on national motorways, bridges and tunnels. The government is also implementing a new policy that aims to improve India's telecommunication systems. All these much-needed infrastructure changes will promote economic development (causality)
- in addition to the role of government, factors responsible for the rapid growth of manufacturing industries include the emergence and investment policies of TNCs (causality)
- another contributing factor is the growth of an urban, educated, middle-class population whose members have become consumers themselves and who provide a large market for new consumer goods (feedback)
- technological factors have also played a significant role, particularly the speed and distance over which communications and movement can now take place due to changes in computer, transport and communication technologies (causality)
- reasons for the rapid expansion in the service sector include lower labour costs, a large English speaking workforce, a highly skilled and educated workforce and ICT skills shortages in some developed countries (interdependence)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'examine' (AO2.1c) requires that candidates consider the role of government in the location and development of economic activity in India in a way that uncovers the assumptions and interrelationships of the issue. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the role of government in the location and development of economic activity in India that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of economic growth and challenge in India to provide few judgements.

6. Assess the success of strategies implemented in India to manage *one* environmental problem associated with economic growth. [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.3.7
Indicative content

There are a range of environmental problems (risks) associated with economic growth in India.

Likely themes and specialised concepts include:

- environmental problems associated with fossil fuel use – the Indian government has committed to tripling its coal-fired electricity capacity to 450 gigawatts by 2030.To cater for coal-fired electricity, the Power Ministry plans to double coal production to 1 billion tons within five years. The coal expansion plans through 2030 will at least double sulphur dioxide levels, along with those of nitrogen oxide and particulate matter (causality)
- environmental problems associated with industrial pollution – 764 industrial units along the main stretch of the River Ganges and its tributaries discharge 500 million litres of toxic waste a day (causality)
- environmental problems associated with soil erosion – 30% of India's gross agricultural output is lost every year to soil degradation, poor land management and counter-productive irrigation (causality)
- environmental problems associated with desertification – 25% of India's total land is undergoing desertification while 32% is facing degradation that has affected its productivity, critically affecting the livelihood and food security of millions across the country: the major forms of land degradation include soil erosion (which accounts for over 71% of the total degradation), and wind erosion (10%). (risk)
- strategies to manage environmental problems associated with economic growth include the Chipko movement a livelihood protection movement and forest conservation movement which attempts to mitigate against the effects and strategy(ies) which increase resilience and involve adaptation
- the lack of political commitment, lack of a comprehensive environmental policy, poor environmental awareness, functional fragmentation of the public administration system, poor mass media concern, and prevalence of poverty which are some of the major factors responsible for increasing the severity of the problems
- comparison of the success of different measures employed in different environments (place)
- improvements in the use of strategies over time (time scales) and as a result of the international pressure/agreements (globalisation)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'assess' (AO2.1c) requires that candidates weigh up the success of strategies implemented in India to manage one environmental problem associated with economic growth by giving a number of possible explanations / arguments / outcomes and justify which is/are favoured. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the success of strategies implemented in India to manage one environmental problem associated with economic growth that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of economic growth and challenge in India to provide few judgements.

7. Examine the role of government in the location and development of economic activity in China. [30 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.3.4
Indicative content

The development of economic activity in China includes the development of manufacturing industries, service and financial industries and agriculture. Rapid economic growth in China has been largely due to the expansion of the manufacturing sector. Likely themes and specialised concepts include:

- since 1979, five special economic zones (SEZs) and 14 open cities have been proclaimed. These offer reduced restrictions on land, labour, wages, taxes and planning regulations to overseas firms, especially those involved in high-technology industries. The result has been the emergence and dominance of economic activity in coastal areas, which have received most of the internal investment as well as having imported capital, technology and entrepreneurial skills, at the expense of the interior. The PRC has established special economic zones in Shenzhen, Zhuhai and Shantou in Guangdong Province, Xiamen in Fujian province and designated the entire province of Hainan a special economic zone (causality)
- between 1949 and the late 1970s manufacturing in China was undertaken almost entirely by state-owned enterprises (SOEs), mainly heavy industries such as oil, chemicals, power, iron and steel. The 1980s focus on increased productivity forced SOEs towards reform. Large SOEs have improved their management and smaller SOEs eventually privatised. Chinese firms have gradually become more Westernised (globalisation)
- during Mao's era, rural industries called town and village enterprises (TVEs) produced heavy goods such as iron, steel, cement, chemical fertiliser and farm tools. After 1978 these enterprises expanded to develop a wider range of businesses. Many Chinese farmers preferred to invest their resources in rural industry rather than agriculture. This encouraged the growth of small businesses run by the most successful peasants. Thus a new entrepreneurial class began to emerge and TVEs have become the backbone of development in rural areas (place)
- although established by a communist government, SEZs were deliberately located far from the centre of political power in Beijing, minimising political influences. More specifically, the original four zones were sited in coastal areas of Guangdong and Fujian that had a long history of contact with the outside world through outmigration, and at the same time were near Hong Kong, Macao and Taiwan (place).The choice of Shenzhen was especially strategic because it is situated near Hong Kong, the key area from which to learn capitalist modes of economic growth (globalisation)
- the growth in economic activity in these locations has been reinforced by high levels of rural-urban migration, infrastructure improvements and the investment policies of TNCs. The result has been the emergence and dominance of economic activity in coastal areas, which have received most internal investment as well as having imported capital, technology and entrepreneurial skills, at the expense of the interior (inequalities)
- the government have been instrumental in implementing the Western China Development project, created in 2000, to help the western provinces to catch up with coastal areas. The main components of the strategy include the development of transport, hydropower plants, energy, and telecommunications, enticement of foreign investment, increased efforts on ecological protection, promotion of education and retention of talent flowing to richer provinces

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'examine' (AO2.1c) requires that candidates consider the role of government in the location and development of economic activity in China in a way that uncovers the assumptions and interrelationships of the issue. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the role of government in the location and development of economic activity in China that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of economic growth and challenge in China to provide few judgements.

8. Assess the success of strategies implemented in China to manage *one* environmental problem associated with economic growth. [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.3.7
Indicative content

There are a range of environmental problems (risks) associated with economic growth in China.

Likely themes and specialised concepts include:

- environmental problems associated with fossil fuel use: China opened two new coal-fired power stations every 10 days between 2005-8; coal demand doubled from 1990 to 2007 resulting in increased emissions of carbon dioxide, nitrous oxides, acid precipitation (which falls on 30% of China) and smog (causality)
- environmental problems associated with industrial pollution: 90% of urban waterways and lakes are severely polluted and major pollution incidents are common. Nine of the ten most polluted cities in the world are in China
- environmental problems associated with soil erosion: 40 percent of China's territory, or 3,569,200 square kilometres of land, suffers from soil erosion.
- environmental problems associated with deforestation: only 2% of China's forests remain intact and only 0.1% of these surviving forests are properly protected. The rest are threatened by plantations: in Hainan and Yunnan, for example, indigenous trees are felled to make way for fast-growing eucalyptus plantations, which are used to make paper pulp
- environmental problems associated with desertification: up to 400 million people are at risk of desertification in China – the affected area could cover as much as 3.317 million km2 – 34.6 per cent of the total land area. Much of it is happening on the edge of the settled area, which suggests that human activities are largely to blame (causality)
- strategies to manage environmental problems associated with economic growth include the 'Green Wall of China', which was launched in 1978 and aims to increase human-made tree cover from five per cent to 15 per cent of the country's vast landmass. These forests are envisioned to stretch across four million square kilometres of the country's north by the year 2050 (mitigation) (sustainability)
- although the Chinese government has mapped out ambitious environmental initiatives in recent five-year plans, experts say few have been realised
- assessment of the effectiveness and success of the strategy(ies) which increase resilience and mitigate against the effects
- comparison of the success of different measures employed in different environments (place)
- improvements in the use of strategies over time (time scales)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'assess' (AO2.1c) requires that candidates weigh up the success of strategies implemented in China to manage one environmental problem associated with economic growth by giving a number of possible explanations / arguments / outcomes and justify which is/are favoured. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the success of strategies implemented in China to manage one environmental problem associated with economic growth that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of economic growth and challenge in China to provide few judgements.

9. 'Physical factors provide more constraints than opportunities for development'. Discuss with reference to two or more Sub-Saharan African countries. [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.6.2
Indicative content

There are a range of physical factors influencing development in Sub-Saharan African countries (causality).

Likely themes and specialised concepts include:

- the influence of the resource base of minerals and energy sources on development eg oil in South Sudan, uranium in Niger
- the influence of soils, relief, climate and water availability on development
- the constraining effects of climate variability, droughts and / or floods on development
- the availability of cultivable agricultural land
- neo-colonial influences can lead to instability, 'the resource curse', with China challenging US economic hegemony in some countries such as South Sudan and compromising development (globalisation)
- recurrent natural hazards, particularly drought, constrain development (risk)
- the impact of natural hazards and climate change on water availability and soil erosion operate to constrain development (risk)
- the influence of locational factors eg access to ports or a landlocked location (place)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'discuss' (AO2.1c) requires that candidates offer a considered review that includes a range of arguments with more than one side evident and reach a conclusion about whether pphysical factors provide more constraints than opportunities in two or more Sub-Saharan African countries for development. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about whether physical factors provide more constraints than opportunities in two or more Sub-Saharan African countries for development that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of development in an African context to provide few judgements.

10. Assess the success of strategies implemented in selected Sub-Saharan African countries to address the consequences of desertification. [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.6.6
Indicative content

Likely themes and specialised concepts include:

- consequences of desertification include physical (water table lowering, rivers and wells dry up, land degradation and vegetation loss) and human (migration, food supply problems, famine, malnutrition and death) (risk)
- strategies to address the consequences of desertification include the development and promotion of good practices in terms of soil and water conservation techniques (stone bunds, magic stones) to mitigate against the effects
- adaptive strategies include the use of drought resistant crops (adaptation)
- assessment of the effectiveness and success of which increase resilience and mitigate against the effects
- comparison of the success of different measures employed in different environments (place)
- improvements in the use of strategies over time (time scales)
- evidence for success by making reference to indicators: indicators covered may include social, environmental and demographic measures of improvement indicative of progress made
- the scale of the strategy(ies), with the monitoring and measurement of the success of small-scale, bottom-up strategies being more effective (scale)
- the longevity of the strategy(ies) (sustainablilty)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'assess' (AO2.1c) requires that candidates weigh up the success of strategies implemented to address the consequences of desertification in at least two Sub-Saharan African countries by giving a number of possible explanations / arguments / outcomes and justify which is/are favoured. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the success of strategies implemented to address the consequences of desertification in at least two Sub-Saharan African countries that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of development in an African context to provide few judgements.

11. 'Global patterns of energy demand are influenced mainly by economic factors.' To what extent do you agree? [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.4.3
Indicative content

Global patterns of energy demand are influenced by economic, social and technological factors.

Likely themes and specialised concepts include:

- the growing demand for energy, which during the 20th century increased tenfold, with consumption expected to double to around 900 exajoules by 2050
- rising demand is linked to economic growth. This is particularly the case for the NICs and BRICS, where energy for manufacturing is an important driver of growth. Economies such as China's grow at about 10 percent a year. China is known as the 'Workshop of the World' and this exponential growth requires huge quantities of energy. Countries that experience a low level of development need to grow so that large proportions of their populations can rise out of poverty. As people acquire more wealth, more energy is used for appliances and gadgets for cooking, heating, air conditioning and lighting. In an increasingly globalised world, with growing international trade and tourism, the transport of people and goods by air, sea and land has increased the demand for energy enormously (causality) (globalisation)
- in social terms, leisure and social activities very often require energy: underlying all these are needs for transport, cooking, heating, air conditioning and lighting. In emerging economies car ownership becomes an aspiration and is rising rapidly in countries such as China, as people want to commute in comfort, travel to see friends and relatives and to enjoy hobbies and holidays (causality) (globalisation)
- technology has produced equipment that requires energy. Car ownership grows continuously. Growing international trade has led to the transport of goods by air, sea and land. Around the home, washing machines, vacuum cleaners, TVs, computers, games consoles, sound systems and mobile phones have developed. Electronic gadgets are found in almost all activities. The number of appliances and gadgets owned in the world increases daily, all needing energy (causality) (globalisation)
- economic growth as the main driver of the growing demand for energy as there is a strong positive correlation between GDP per capita and energy usage (causality)
- the interdependence of economic, social and technological factors as with a strong economy and increased affluence, people use more energy in their homes and for recreational purposes and a growing economy provides the investment for technological change (interdependence)
- demand reduction policies are increasingly driven by environmental concerns and the risks associated with climate change (mitigation) (sustainability)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command 'to what extent do you agree' (AO2.1c) requires that candidates give possible explanations for and against and justify a viewpoint about the extent to which they agree that global patterns of energy demand are influenced mainly by economic factors. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the extent to which they agree that global patterns of energy demand are influenced mainly by economic factors that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of energy challenges and dilemmas to provide few judgements.

12. 'The technological problems associated with alternative energy sources are greater than the environmental problems associated with fossil fuels'. Discuss.

[22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.4.5
Indicative content

There are a range of environmental problems associated with the extraction, transport and use of fossil fuels and technological problems associated with alternative energy sources.

Likely themes and specialised concepts include:

- coal is the most polluting source of energy (greenhouse gases, acid rain and smog) (causality). Underground mines lead to surface subsidence and toxic waste and water. Opencast pits scar the landscape. Although legislation requires restoration, new ecosystems are of low quality
- oil infrastructure from large oilfields visually pollutes a large area. Oil spills at production sites (eg Gulf of Mexico Deepwater Horizon oil spill) along pipelines and tanker routes are ecologically disastrous. Ecological issues surround oil exploration in fragile, environmentally sensitive areas such as the Arctic (risk)
- natural gas is generally seen as the cleanest of fossil fuels in greenhouse gas terms, but flare-off as a waste product of oilfields causes major environmental problems (causality)
- unconventional sources of oil and gas such as tar sands and shale gas may lead to water contamination, the threat of earthquakes and environmental degradation
- the more electric energy supplied by renewables, the more unstable national grids become as renewables such as wind and solar only produce electricity intermittently and as more renewables come online it becomes more complex to manage fluctuations in the grid
- there are many ways of producing power to meet future demands, but most of the technology needed has yet to be developed. Only the most developed countries have the numbers of educated people, the research facilities and the funding to develop new technologies (inequalities). Many ideas for technological solutions are untested and may prove to be unfeasible or misguided.
- the interdependence of environmental problems and technological problems as new technologies for fossil fuels are being developed, including carbon capture and sequestration and gasification
- linked to the above, the environmental problems associated with fossil fuels, should decrease, therefore the relative importance of the problems may change over time (time scales)
- there are spatial variations in the energy mix of countries which will influence the relative importance of the two categories of problem (place)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command word 'discuss' (AO2.1c) requires that candidates offer a considered review that includes a range of factors with more than one side evident and reach a conclusion about the statement that the technological problems associated with alternative energy sources are greater than the environmental problems associated with fossil fuels. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the statement that the technological problems associated with alternative energy sources are greater than the environmental problems associated with fossil fuels that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of energy challenges and dilemmas to provide few judgements.

13. To what extent can the damaging effects of high-pressure systems be minimised?[22 marks]

AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.5.5
Indicative content

The main characteristics of hazards associated with high-pressure systems and strategies used to minimise the damaging effects of high-pressure systems within either tropical or temperate regions.

Likely themes and specialised concepts include:

- the risks to people associated with high-pressure systems including drought (tropical and temperate regions) and frost and fog (temperate regions)
- damaging effects include: environmental (eg water table, soil–water movement, land degradation and vegetation), demographic (eg migration), economic (eg food supply problems) and social (eg famine and health) in tropical regions (causality)
- damaging effects include: environmental (eg rivers may be used for water supply, reservoirs emptied and HEP production reduced), economic (eg dangers for shipping) and social (eg difficult driving conditions, water rationing) in temperate regions (causality)
- ways to manage the damaging effects may follow a temporal sequence – pre, during and post disaster (Park's model of response curve) and involve risk assessment, mitigation, preparedness and emergency plans including the hazard management cycle framework of monitoring, prediction, warning, immediate response and long term planning (mitigation and adaptation)
- assessment of the effectiveness and success of different elements of the hazard management cycle which increase resilience and mitigate against the effects
- comparison of the success of different measures employed in different environments (place)
- improvements in the use of measures have improved over time (time scales)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command 'to what extent' (AO2.1c) requires that candidates give possible explanations for and against and justify a viewpoint about the extent to which the damaging effects of high-pressure systems can be minimised. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the extent to which the damaging effects of high-pressure systems can be minimised that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of weather and climate to provide few judgements.

14. 'It is easier to adapt to climate change than to mitigate against it'. To what extent do you agree? [22 marks]
AO1 [9] AO2.1c [11] AO3.3 [2]

Focus: 3.5.7
Indicative content

Likely themes and specialised concepts include:

- mitigation involves reducing the output of greenhouse gases and increasing the size of greenhouse gas sinks. Strategies that mitigate against climate change include: replacing fossil fuel consumption, switching to renewable energy options, implementing transport policies to reduce congestion and air pollution, limiting deforestation, conserving and restoring existing forests, educating people to encourage them to conserve energy (mitigation)
- adaptation involves changing lifestyles to cope with a new environment rather than trying to stop climate change. Adaptive strategies include: relocation of people affected by sea-level rise, developing new technological solutions such as drought-resistant crops, modifying the threat using some form of protection eg a flood barrier, changing the use of land eg different crops grown in response to changing climate or developing hill walking holidays in former ski resorts (adaptation)
- low-income countries have less scope for mitigation as they are less likely to be heavy emitters of greenhouse gases (inequalities)
- low-income countries often depend on the support of high-income countries for support with coping with climate change as required by the Copenhagen Accord (interdependence)
- the heavy emitters have greater resources to cope with climate change through mitigation and adaptation (resilience)
- effective adaptation and mitigation strategies are tailored to local and regional needs and circumstances (place)

Credit other valid approaches.

Marking guidance (refer to the assessment grid at the start of Section B)

The command 'to what extent do you agree' (AO2.1c) requires that candidates give possible explanations for and against and justify a viewpoint about the extent to which they agree that it is easier to adapt to climate change than to mitigate against it. At the upper end, answers that score highly should show application of knowledge and understanding by appraising and judging utility and validity, synthesising information, and come to rational conclusions about the extent to which they agree that it is easier to adapt to climate change than to mitigate against it that are evidence based. Responses in the middle range should show some application of knowledge and understanding to provide some judgements and synthesis, prior to drawing partially supported conclusions. Lower end responses provide very limited application of knowledge and understanding of weather and climate to provide few judgements.

Appendix 1 – Assessment Objectives Summary grid

Unit 1					
Section A Landscapes - core	AO1	AO2	AO3	Sub total	
Q1/Q3 stimulus	5	6	5	16	AO marks can be divided across the 2 questions; but last part of each question is an extended response of 5 AO1 +3 AO2
Q2/Q4 stimulus	5	6	5	16	
Total for section	**10**	**12**	**10**	**32**	
Section B tectonics – non core	23	22	19	**64**	
Combined A & B AO Total	**33**	**34**	**29**	**96**	
Unit 2					
Section A Places - core	AO1	AO2	AO3	Sub total	
Q1 stimulus	5	6	5	16	AO marks can be divided across the 2 questions; but last part of each question is an extended response of 5 AO1 +3 AO2
Q2 stimulus	5	6	5	16	
Total for section	**10**	**12**	**10**	**32**	
Section B fieldwork – non core	**12**	**11**	**9**	**32**	
Combined A & B AO Total	**22**	**23**	**19**	**64**	
Unit 3					
Section A Carbon & Water					
Q1	4	0	3	7	Horizontal marks to be retained as set, as above but AOs (vertical) can be divided between the questions
Q2	5	5	0	10	
Q3 or Q4 essay (choice of 2)	10	8	0	18	
Total for section	**19**	**13**	**3**	**35**	
Section B Migration & Oceans					
Q5	5	0	3	8	Horizontal marks to be retained as set, as above but AOs (vertical) can be divided between the questions
Q6	4	5	0	9	
Q7 or Q8 essay (choice of 2)	10	8	0	18	
Total for section	**19**	**13**	**3**	**35**	
Section C Synoptic Q9/Q10	**10**	**10**	**6**	**26**	
Combined A & B AO Total	**48**	**36**	**12**	**96**	
Unit 4					
Section A Tectonics essay	6	13	1	20	
Section B Contemporary themes essays					
Essay 1	9	11	2	22	
Essay 2	9	11	2	22	
Combined A & B AO Total	**24**	**35**	**5**	**64**	