GCE A LEVEL MARKING SCHEME

SUMMER 2023

A LEVEL
GEOGRAPHY - UNIT 4
1110U40-1

INTRODUCTION

This marking scheme was used by WJEC for the 2023 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

WJEC GCE A LEVEL GEOGRAPHY

UNIT 4: CONTEMPORARY THEMES IN GEOGRAPHY

SUMMER 2023 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 component 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 component. The targeted AO(s) are also indicated, for example AO2.1c.

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.

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 a two stage process.

Banded mark schemes Stage 1 – Deciding on the band

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 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.

Where the specialised concepts are integral to knowledge and understanding, they are underlined in the indicative content.

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 infringement 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: Theme 1: Tectonic Hazards: Generic Mark Bands [20 marks]

	AO1 [6 marks]	AO2 [13 marks]	AO3 [1 mark]
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

Theme 1: Tectonic Hazards

1. 'Diverging margins produce the least serious tectonic hazards.' Discuss.

[20 marks]
AO1 [6] AO2 [13] AO3 [1]

Focus: 4.1.1, 4.1.2 and 4.1.3

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Distribution of earthquakes and volcanoes with an emphasis on their link to plate boundaries (causality / place)
- The mechanics of plate movement can be linked to the processes operating at: (i) Diverging (causality / place / risk) (ii) Converging (ocean/ocean, ocean/continental and continental/continental) (causality / place / risk) (iii) Conservative margins (causality / place / risk)
- Primary and secondary hazards associated with tectonic activity (place / risk)
- Earthquakes, and the associated wave movements, produce many hazards including:
- Ground shaking, liquefaction, landslides, mudflows and tsunamis (place / risk / scale)
- Role of focus, depth of focus (shallow, intermediate and deep focus) and the epicentre may be considered (place / causality / risk / scale)
- Volcanoes produce many hazards including:
- Pyroclastic flows, lava flows, ash falls, lahars, jökulhlaups, volcanic landslides, toxic gases (place / risk / scale) • The type of volcano and eruption type.
- Reference may be made to: (i) Explosive eruptions (place / risk / scale) (ii) Effusive eruptions (place / risk / scale)
- Impacts: (i) Environmental impacts (e.g. damage to the built environment, landslides) (place / risk / scale) (ii) Demographic impacts (e.g. deaths, migration) (place / risk / scale) (iii) Economic impacts (e.g. disruption to production) (place / risk / scale) (iv) Social impacts (e.g. homelessness, injury, bereavement) (place / risk / scale)

AO2

Application of knowledge and understanding is deployed to discuss whether diverging margins produce the least serious tectonic hazards. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- An examination of the severity of tectonic hazards associated with diverging plate margins (place / risk / scale)
- Comparing and contrasting the severity of tectonic hazards at diverging, converging and conservative margins (place / risk / scale)
- Examination of the severity of demographic, social, economic and environmental impacts of tectonic activity at diverging margins (place / risk / scale)
- Comparing and contrasting the severity of demographic, social, economic and environmental impacts of tectonic activity at diverging, converging and conservative margins (place / risk / scale)
- An examination of the local, regional and global impacts of tectonic activity at diverging, converging and conservative margins (place / risk / scale)
- The impact of tectonic hazards is partially dependent on the physical characteristics of earthquakes and volcanoes and varies in magnitude (scale / place / spatial variations)
- Relative importance of: Predictability, frequency, duration, speed of onset, areal extent (scale / place / spatial variations)

AO3

- The skill of presenting well-constructed, coherent and logical arguments about whether diverging margins produce the least serious tectonic hazards.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about whether diverging margins produce the least serious tectonic hazards.

Credit other valid approaches.

2. Evaluate the success of strategies used to respond to volcanic hazards.

[20 marks]
AO1 [6] AO2 [13] AO3 [1]

Focus: 4.1.4 and 4.1.5

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- A description of primary and secondary hazards associated with volcanic activity and their effects (risk)
- A description of strategies and how they manage hazards. The management may refer to how the strategy allows people to avoid the hazard, to absorb the impacts the impacts of the hazard or to alleviate the impacts of the hazard after it has occurred. (place / mitigation / adaptation / resilience)
- Strategies that respond to the event can be divided into short and long-term responses. Reference could be made to the hazard management cycle (place / mitigation / adaptation / resilience)
- Strategies used to manage volcanic hazards can be divided into:
- (a) Monitoring, predicting and warnings of volcanic eruptions – e.g. Hazard zone mapping / early warning systems / media broadcasts etc. (place / mitigation / risk / adaptation)
- (b) Mitigating volcanic hazards and modifying the event, vulnerability and loss – e.g. evacuation procedures / rescue efforts / provision of aid etc. (place / mitigation / risk / adaptation / resilience)
- (c) those that respond to the event – e.g. reconstruction efforts / rehabilitation / building engineering (Mitigation / adaptation / resilience)

AO2

Application of knowledge and understanding is deployed to evaluate the success of strategies used to respond to volcanic hazards. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. This evidence could include:

- Comparison of the effectiveness of different measures employed in different environments (place)
- The interdependence of strategies. Evacuation (short-term response) is a very effective method of management, but it depends on effective long-term monitoring and prediction (interdependence)
- Variation in the effectiveness of the strategies provided according to the nature of the primary and secondary hazards associated with tectonic activity. For example, the effectiveness of a strategy may vary according to whether the tectonic hazard is a lava flow or liquefaction (place / risk)

- The frequency of the tectonic hazard can determine whether short-term or long-term responses are more effective. Mount Sakurajima in Japan erupts so frequently (548 eruptions in 2009) that long-term responses (hazard map with exclusion zones; annual evacuation drill is a 40-year tradition) are well established (time)
- The magnitude of the tectonic hazard can determine whether short-term or long-term responses are more effective (scale)
- The areal extent of the tectonic hazard can determine whether short-term or long-term responses are more effective (scale), for example the ash associated with the eruption of Eyjafjallajökull (2010) had profound impacts on aviation over European air space. Evacuation proved to be an effective strategy on a local scale, but hazard mapping was more appropriate for the aviation industry on a regional scale (scale)
- The level of economic development can determine which types of strategies local communities affected can afford and have a bearing on their effectiveness (resilience), for example expensive aseismic buildings in California and Japan do perform well even in high magnitude earthquakes (adaptation / mitigation)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments which evaluate the success of strategies used to respond to volcanic hazards.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions which evaluate the success of strategies used to respond to volcanic hazards.

Credit other valid approaches.

Section B: 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.

Section B

Theme 2: Ecosystems

3. Evaluate the success of strategies used to conserve biodiversity. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.2.3 and 4.2.4

Indicative content

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Strategies to conserve biodiversity including a range from total protection through no access to sustainable use (mitigation / place / risk / scale / sustainability)
- Biodiversity 2020 a DEFRA publication is a strategy for England's wildlife and ecosystem services. The biodiversity strategy for England builds on the Natural Environment White Paper and provides a comprehensive picture of how UK are implementing our international and EU commitments. (mitigation / place / resilience / risk / scale / sustainability)
- SACs (Special Area of Conservation): A protected area is a defined geographical space, which is managed, through legal or other means, to achieve the lasting conservation of nature, alongside associated ecosystem services and cultural values. The UK has many different types of Protected Area. In some instances, they are established purely for nature conservation while others, like National Parks, provide a range of purposes including nature, landscape and amenity values. There are a variety of schemes in place:
- Protected areas established under National Legislation: This includes Sites of Special Scientific Interest and National Nature Reserves. (mitigation / place / resilience / risk / scale / sustainability)
- Protected areas established because of European Union Directives or other European initiatives: They include the Natura 2000 network. (mitigation / place / resilience / risk / scale / sustainability)
- Protected areas set up under Global Agreements e.g. Ramsar sites. (mitigation / place / resilience / risk / scale / sustainability)
- Marine Protected Areas. (mitigation / place / resilience / risk / scale / sustainability)
- There are 658 designated SACs (Special Area of Conservation), SCIs (Sites of Community Importance) or cSACs (Candidate SACs – sites waiting to be formally recognised) in the United Kingdom. (mitigation / place / resilience / risk / scale / sustainability)
- The UK Government have established a grants scheme called The Darwin Initiative. It helps to protect biodiversity and the natural environment through locally based projects worldwide. The initiative funds projects that help countries rich in biodiversity but poor in financial resources to meet their objectives. Since 1992, over £140 million has been awarded by the UK Government. This money has been used for over 1,000 projects in 159 countries. An example of a scheme is the development of sustainable ecotourism in the Srepok Wilderness Area (SWA), Cambodia. (inequality / mitigation / place / risk / scale / sustainability)

AO2

Application of knowledge and understanding is deployed to evaluate the success of strategies used to conserve biodiversity. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. This evidence could include:

- Comparing and contrasting the strategies presented (place / resilience / scale / sustainability)
- An evaluation of the relative success of the strategies presented (place / resilience / scale / sustainability / time)
- The scale of the strategies (place / scale / sustainability)
- Comparison of improvements in levels of sustainability of similar strategies employed in different environments (place)
- Improvements in the success of strategies over time (time)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments which evaluate the success of strategies used to conserve biodiversity.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions which evaluate the success of strategies used to conserve biodiversity.

Credit other valid approaches.

4. 'The most severe threat to the Arctic tundra biome is tourism.' To what extent do you agree? [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.2.6 and 4.2.7

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Threats to the Arctic tundra, including tourism, climate change and mineral exploitation (causality / place / risk / thresholds)
- Tourism: Cruise tourism is big business for the Norwegian archipelago of Svalbard in the Arctic Ocean. Ships and passenger groups of all sizes are brought to remote and pristine areas of the archipelago during a short and vulnerable summer season. Sometimes, 6,000 tourists can visit at the same time, which is nearly three times the population of Longyearbyen, the largest settlement and administrative centre of Svalbard. The vast energy requirements of cruise ships, together with their function as floating hotels, means the vessels produce large amounts of emissions and considerable quantities of sewage, rubbish and wastewater. The Alaska Cruise Ship Initiative sets the volume of grey water produced per passenger at 190 litres per day for large ships, and 95 litres per day for small ships. Black water volumes are about the same for small and large vessels and are estimated to be between 19 – 38 litres daily per passenger. (place / risk / sustainability / scale)
- Climate change: More than 180 native communities in Alaska (86% of the total) are flooding and losing land because of the ice melt that is part of the changing global climate. The state's northern parts have seen an average temperature rise of three degrees Celsius in recent decades.
- Mineral exploitation: The exploration of oil, gas, and minerals in the tundra and the construction of pipelines and roads can cause physical disturbances and habitat fragmentation. Oil spills can kill wildlife and significantly damage tundra ecosystems – a good example of this would be the Exxon Valdez disaster of 1989. (place / risk / sustainability / scale)
- Consequences of exploiting the Arctic tundra include physical impacts (environmental degradation / climate change / loss of unique flora and fauna etc.) and human impacts (migration, food supply problems, loss of unique heritage and culture etc.) (place / risk / sustainability)
- Strategies used to manage the Arctic tundra biome and promotion of good practices (mitigation / adaptation / sustainability / resilience)

AO2

Application of knowledge and understanding is deployed to examine whether tourism is the most severe threat to the Arctic tundra biome. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. This evidence could include:

- An examination of the severity of the threats associated with tourism in the Arctic tundra. (place / risk / scale)
- Comparing and contrasting the severity of the threats associated with tourism, climate change and mineral exploitation. (place / risk / scale)
- Candidates may highlight the fact that there are positive as well as the negative outcomes of human activity in the Arctic tundra (mitigation / adaptation / resilience / sustainability)
- The Arctic Tundra offers direct economic benefits and supports economic activity at a range of scales from local to global (scale)
- Comparison of the success of different measures employed in different environments (place)
- Improvements in the use of strategies over time (time scales)
- The scale of the strategy(ies) employed – local / regional / global (scale)
- The longevity of the strategy(ies) (time scales / sustainability

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about whether tourism is the most severe threat to the Arctic tundra biome.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about whether tourism is the most severe threat to the Arctic tundra biome.

Credit other valid approaches

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

5. 'Droughts and floods are the biggest constraints for economic development in India.' Discuss. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.3.1 and 4.3.3

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- The Indian subcontinent covers a vast geographical area of 3.3 million sq. km and therefore has a wide range of physical features that can promote or hinder development (place / scale / causality)
- The role of the following factors may be considered:
- Climate variability – constraining effects of climate on human activity including droughts and floods. These threats can be studied in the context of agriculture and urban activities where they can affect electricity supply, sanitation and lead to water contamination (place / causality / risk / interdependence)
- Rivers / water availability – Rivers in India fluctuate greatly in volume due to the presence of the monsoon and/ or being snow-fed from the Himalayas. Water availability becomes more limited nearer the Thar Desert in the west. (place / causality / risk / interdependence)
- A wide variety of climatic regions can be observed in India varying from arid desert in the west, humid tropical climates in the far south and alpine tundra in the Himalayan north. The distribution of human activities can be linked to the variability of climate. The arid climate of the Thar Desert presents a major constraint in the west whilst the monsoon rainfall can be hugely disruptive in the growing urban areas as it weakens infrastructure. (place / scale / risk / causality / interdependence)
- Relief and drainage patterns – The agricultural sector in India is very strong and provides employment for the majority of the population. The fertile floodplains of the north are the result of its unique physical environment and as such support a successful agricultural sector e.g. The Indo-Gangetic Plain (which is dominated by three major rivers – The Ganges, the Indus and the Brahmaputra) However, the remote mountainous regions can often prohibit the development of industry and services e.g. The Himalayan Mountains., The Peninsular Plateau, The Coastal Plains, The Thar Desert and The Islands (place / causality / interdependence)
- Resource base - Availability of energy sources and minerals – India has a wealth of energy and mineral resources. There are coal and bauxite reserves that are relatively unexplored and unutilised. Copper and gold are also present but under explored (place / causality / interdependence)
- Social and economic barriers to economic development may also be introduced. These may include factors affecting population distribution, growth and structure. In addition, issues surrounding political systems and governance influencing social change including health, education and welfare may be included. (place / causality / inequality / interdependence / place)

AO2

Application of knowledge and understanding is deployed to examine whether droughts and floods are the biggest constraints for economic development in India. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- The relative role of droughts and floods in constraining economic development in India. (inequality / place / scale)
- The interdependence of climatic, hydrological, natural resource and topographical factors. (interdependence)
- Spatial variations. (place / scale)
- Variation in the importance of factors over time. (time scale)
- An examination of the relative importance of social and economic barriers to economic development. (inequality / interdependence / place / scale)

AO3

- The skill of presenting well-constructed, coherent and logical arguments about whether droughts and floods are the biggest constraints for economic development in India.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about whether droughts and floods are the biggest constraints for economic development in India.

Credit other valid approaches.

6. Evaluate strategies used to manage <u>one</u> environmental problem associated with economic growth in India. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.3.6 and 4.3.7

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Environmental pressures associated with economic growth: Fossil fuel use, industrial pollution, soil erosion, deforestation and desertification. (causality / place / risk / scale / sustainability)
- Environmental pressures associated with rapid urbanisation – This has led to the uncontrolled growth of slums in cities with environmental problems of waste, water and air pollution e.g. Dharavi slum in Mumbai. (causality / inequality / place / risk / scale / sustainability)
- Rapid economic development has led to an increased demand for water, food and energy in both urban and rural areas. (causality / place / risk / scale / sustainability)
- There has been a long history of environmental concern in India. These include movements to raise environmental issues, such as the Chipko protests against the exploitation of resources. (mitigation / place / resilience / sustainability / time)
- Strategies to improve the security of ***<u>either water or food or energy</u>*** – Strategies can be local or regional and could be from the state or NGOs. Biogas production in rural Maharashtra provides a good example of a sustainable solution to improved energy security. (adaptation / mitigation / place / resilience / scale / sustainability / time)
- Rainwater harvesting projects to manage water shortages in Gujarat or Rajasthan. (adaptation / mitigation / place / resilience / sustainability / time)
- Banning auto-rickshaws in Delhi to combat vehicle pollution. (mitigation / place / resilience / sustainability / time)
- The federal and state structure inhibits country-wide implementation of some strategies and political will/governance is a significant constraint. (causality / inequality / place /scale)

AO2

Application of knowledge and understanding is deployed to evaluate strategies used to manage one environmental problem associated with economic growth in India.

Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. This evidence could include:

- Comparing and contrasting the strategies presented (place / resilience / scale / sustainability)
- An evaluation of the relative success of the strategies presented (place / resilience / scale / sustainability / time)
- The scale of the strategy, with improvements in the sustainability of small-scale, bottom-up, participatory strategies in urban communities being more effective (place / scale / sustainability)
- Comparison of improvements in levels of sustainability of similar strategies employed in different environments (place)
- Improvements in the success of strategies over time (time)
- The scale of the challenges that require sustainable solutions due to the unprecedented speed of urbanisation in India (globalisation / inequality / place)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments which evaluate strategies used to manage one environmental problem associated with economic growth in India.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions which evaluate strategies used to manage one environmental problem associated with economic growth in India.

7. 'Droughts and floods are the biggest constraints for economic development in China.' Discuss. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.3.3 and 4.3.1

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- The role of the following factors may be considered:
- Climate variability – Historically, China has suffered from both droughts and flooding. (place / risk / time scale / causality)
- Natural disasters can render land less productive and can lead to food insecurity. This can lead to outmigration on a grand scale and constrain economic development. (place / risk / time scale / causality)
- Climate: There are significant climatic variations within China including vast differences in rainfall totals. Temperatures vary and influence the length of the growing season across the country (place / scale / causality)
- Rivers / water availability (place / scale / causality)
- Relief: Mountainous terrain in the west to the flat terrain in the east (place / scale / causality)
- Resource base: Mineral and resource exploitation can play in regional economic development and the development of industry / the location and development of container ports (place / globalisation / interdependence)
- Social and economic barriers to economic development may also be introduced. These may include factors affecting population distribution, growth and structure. In addition, issues surrounding political systems and governance influencing social change including health, education and welfare may be included. (place / causality / inequality / interdependence / place)

AO2

Application of knowledge and understanding is deployed to examine whether droughts and floods are the biggest constraints for economic development in China. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- The relative role of droughts and floods in constraining economic development in China. (scale / place / inequality)
- The interdependence of climatic, hydrological, natural resource and topographical factors. (interdependence)
- Spatial variations. (place / scale)
- Variation in the importance of factors over time. (time scale)
- An examination of the relative importance of social and economic barriers to economic development. (inequality / interdependence / place / scale)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about examine whether droughts and floods are the biggest constraints for economic development in China.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about examine whether droughts and floods are the biggest constraints for economic development in China.

Credit other valid approaches.

8. Evaluate strategies used to manage <u>one</u> environmental problem associated with economic growth in China. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.3.6 and 4.3.7

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- The risks facing the environment due to the recent rapid economic growth. The use of fossil fuels directly impacts air quality in China and contributes to the process of climate change. (place / risk / scale / sustainability / time)
- The rapid growth of industry has had negative impacts on differing parts of the environment. Many waterways are polluted and industrial waste has led to an increased incidence of cancer in some areas - dubbed 'Cancer Villages'. (inequality / place / risk / sustainability)
- Air quality issues are particularly apparent in urban areas, the cities in China's industrial north regularly making international headlines. (inequality / place / risk / sustainability)
- The intensification of farming practices has led to soil degradation which has impacted on the lives of people in some of the poorest parts of China. (inequality / place / risk / sustainability)
- Deforestation has led to desertification in the north and west of China and to soil erosion in parts of the country, particularly on the Loess Plateau. (place / risk / scale / sustainability)
- Strategies to improve the security of ***<u>either water or food or energy</u>*** – (adaptation / mitigation / place / resilience / scale / sustainability / time)
- China's huge expenditure on renewable energy is also part of the drive towards a more sustainable way of living and can be viewed within the context of helping to create sustainable urban areas. (mitigation / place / resilience / sustainability)
- Strategies implemented at an international level such as the UN-HABITAT/UNEP Sustainable Cities Programme promotes environmental, social and economic sustainability of cities through an Environmental Planning and Management (EPM) approach which is characterized by a broad-based, participatory decision-making process facility. Between 2008-13 6 projects were implemented in China, 3 of which are ongoing. (mitigation / place / resilience / sustainability)
- Strategies implemented at a national level such as the construction of eco-cities e.g. Tianjin. Cities are units of central government (mitigation / place / resilience / sustainability)
- Strategies implemented to deal with a specific aspect of urban sustainability in China e.g. reforming the hukou household-registration system to provide equal access to quality services for all citizens (inequality / mitigation / place / resilience / sustainability)

AO2

Application of knowledge and understanding is deployed to evaluate strategies used to manage one environmental problem associated with economic growth in China. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. This evidence could include:

- Comparing and contrasting the strategies presented (place / resilience / scale / sustainability)
- An evaluation of the relative success of the strategies presented (place / resilience / scale / sustainability / time)
- The scale of the strategy, with improvements in the sustainability of small-scale, bottom-up, participatory strategies in urban communities being more effective (place / scale / sustainability)
- Spatial variations in levels of urban sustainability as eastern Chinese cities are challenged by more and greater problems of sustainability (place / sustainability / inequality)
- Comparison of improvements in levels of sustainability of similar strategies employed in different environments (place)
- Improvements in the success of strategies over time (time)
- The reliance on the co-ordination of state authorities (which own urban land) and collectives (which own rural land) for the success of strategies, with integration of the land market (urban and rural) an essential pre-requisite (interdependence)
- The scale of the challenges that require sustainable solutions due to the unprecedented speed of urbanisation in China (globalisation / inequality / place)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments which evaluate strategies used to manage one environmental problem associated with economic growth in China.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question
- The skill of reaching conclusions which evaluate strategies used to manage one environmental problem associated with economic growth in China.

Credit other valid approaches.

9. 'Human factors are the main cause of desertification.' Discuss with reference to selected Sub-Saharan African countries. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.3.9 and 4.3.13

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

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

AO2

Application of knowledge and understanding is deployed to examine whether human factors are the main cause of desertification. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

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

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about whether human factors are the main cause of desertification.
- The skill of constructing relevant diagrams, which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about whether human factors are the main cause of desertification.

Credit other valid approaches.

10. Discuss the importance of the World Bank and IMF in promoting development in selected Sub-Saharan African countries. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.3.11 and 4.3.14

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Reasons for a lack of development in selected Sub-Saharan African countries – physical and human factors may be introduced e.g. resource base / climate / trade blocs / MNCs / colonialism / neo-colonialism etc. (causality / risk)
- Impacts of a lack of development may be considered – e.g. impact on GDP per capita / HDI / literacy rates / IMR / birth and death rates etc. (place / inequality)
- Strategies to promote development in Sub-Saharan Africa:
  (i) World Bank and IMF – e.g. World Bank in the Niger Delta - investments in hydropower plants, reservoirs, irrigation schemes, and navigation facilities (mitigation / resilience / sustainability / adaptation / scale)
  (ii) National governments – e.g. Special Economic Zones in Ethiopia, Nigeria and Zambia / Botswana - Largely free of kleptocracy and civil conflict - it has maintained a transparent, law-abiding government and it has implemented good policies, including a hyper-prudent fiscal policy (mitigation / resilience / sustainability / adaptation / scale)
  (iii) The World Bank is a vital source of funding of INGOs and in turn, local partners. International aid agencies, NGOs and micro-finance schemes – e.g. Practical Action in Kenya / Kenya Women Finance Trust (KWFT) (mitigation / resilience / sustainability / adaptation / scale)

AO2

Application of knowledge and understanding is deployed to discuss the importance of the World Bank and IMF in promoting development in selected Sub-Saharan African countries. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Comparing and contrasting the schemes identified (place / scale / sustainability)
- An examination of the relative importance of the World Bank and IMF in promoting development in selected Sub-Saharan African countries. (place / scale / resilience / sustainability / time)
- The scale of the strategies employed – local / regional / global (scale)
- The longevity of the strategies (time)
- Comparison of the success of different measures employed in different countries (place)
- Improvements in the use of strategies over time (time)
- The interdependence of strategies used to promote development in Sub-Saharan African countries (interdependence)

- A recognition of the fact that some World Bank projects, often hugely expensive, have been highly unsuccessful and unwelcomed by local communities. Some have had disastrous consequences for development and have been seen as benefitting neo-liberal elites. (causality / inequality / place / risk / scale / vulnerability)
- IMF funding has also been criticised for forcing inappropriate neo-liberal economic policies with “strings attached” on to countries, which have no alternative means of finance for development. (causality / inequality / place / risk / scale / vulnerability)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about the importance of the World Bank and IMF in promoting development in selected Sub-Saharan African countries.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about the importance of the World Bank and IMF in promoting development in selected Sub-Saharan African countries.

Credit other valid approaches.

Theme 4: Energy Challenges and Dilemnas

11. 'Technological factors are having the greatest influence on changes in demand for energy.' To what extent do you agree? [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.4.3 and 4.4.7

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- The growing demand for energy, which during the 20th century increased tenfold, with consumption expected to double to around 900 exajoules by 2050 (risk / sustainability / thresholds)
- 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 / place /globalisation)
- The number of people has a direct impact on the demand for energy, as people need energy for their basic day to day activities: to stay warm, to do washing etc., mostly in their homes (although e.g. travel is not based at home). A greater number of people means more or bigger households, both of which will drive up demand for energy, although not necessarily by the same amount. Population growth is a major issue in the developing world and these demographic pressures cannot be ignored. (causality / place / sustainability / interdependence)
- 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 / place / globalisation)
- 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 and this exponential growth requires huge quantities of energy. (causality / place / globalisation)
- Socially, 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 / place / globalisation)

AO2

Application of knowledge and understanding is deployed to examine whether technological factors have the greatest influence on the changing demand for energy. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Current and likely future demands for energy will be discussed for a range of levels and stages of development. (scale / place / timescales)
- The relative importance of factors may vary according to scale. Factors driving energy demand at the global scale may differ from those driving energy demand at the local scale (place / scale / causality)
- Other demands identified (causality / interdependence / place / scale)
- The interdependence of economic, demographic, social and technological factors (place / interdependence / scale)
- Examination of the importance of technological factors in relation to other factors (place / causality / interdependence)
- The extent to which technological are capable of influencing the demand for energy (place / scale / interdependence)
- Whether or not technological factors are critical in the demand for energy. For example, economic growth may play a more influential role - the recent rise in demand for energy in NICs and BRICs is mostly associated with economic factors (causality / place / scale / interdependence)
- The relative importance of factors varies spatially. In countries at a very low level of economic development, demographic factors may be more important (causality / place)
- Demographic factors are associated with an increase in the demand for energy whereas technological (greater efficiency) and economic (cost) factors may be associated with a reduction in demand (causality / mitigation)
- Evaluation of the relative importance of technological factors on the demand for energy over time (time scale / place / interdependence / globalisation)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about whether technological factors have the greatest influence of the changing demand or energy.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about whether technological factors have the greatest influence of the changing demand or energy.

Credit other valid approaches.

12. 'The political problems associated with fossil fuels are more significant than the economic problems.' Discuss. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.4.4 and 4.4.5

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Political problems: E.g. Management of oil supplies by OPEC and national governments / management of oil and gas exploration and production by MNCs and national governments (place / risk / sustainability / scale)
- Reference to the economic problems associated with the extraction and use of fossil fuels. E.g. Fuel poverty and costs associated with the use of petrol, natural gas / managing the imbalance between the supply of and demand for oil and gas through transfers, storage and pricing (place / risk / sustainability / scale)
- Technological problems: E.g. Problems accessing and extracting energy. (place / risk / sustainability / scale)
- Environmental problems: Degradation / pollution associated with the extraction and use of energy and role in global climate change (place / risk / sustainability / scale / temporal scale)

AO2

Application of knowledge and understanding is deployed to discuss whether the political problems associated with fossil fuels are more significant than the economic problems. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Comparing / contrasting the problems associated with fossil fuels. (place / causality / interdependence / risk / scale)
- An evaluation of the relative importance of the problems identified. (place / causality / interdependence / risk / scale)
- The scale of problems identified – local, regional, national and global impacts. (place / scale / risk / sustainability)
- The changing importance of problems over time (place / time scale / risk / sustainability)
- The relative importance of problems varies spatially (causality / place)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments about whether the political problems associated with fossil fuels are more significant than the economic problems.
- The skill of constructing relevant diagrams, which are annotated to meet the requirements of the question.
- The skill of reaching conclusions about whether the political problems associated with fossil fuels are more significant than the economic problems.

Credit other valid approaches.

Theme 5: Weather and Climate

13. Evaluate the influence of air masses on the weather in Wales and the rest of the United Kingdom. [22 marks]
AO1 [9] AO2 [11] AO3 [2]

Focus: 4.5.1 and 4.5.3

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- The sources and characteristics of air masses and their influence on the UK'S weather (the Polar Continental, Polar Maritime, Arctic Maritime, Tropical Maritime and Tropical Continental air masses). (causality / place / scale / time)
- The climate and weather of the UK (Cool temperate western margin climatic type). This climatic type is characterised by relatively mild temperatures (average seasonal range 5–20ºC), along with high humidity and precipitation (averaging 600 mm) throughout the year. (place / scale / time)
- Precipitation totals are significantly higher over upland areas in the face of prevailing moist westerly winds coming off the ocean, e.g. in the Cambrian Mountains of Wales. Conversely, precipitation totals are low in rain-shadow areas, e.g. lowland East Anglia. (inequality / place / scale)
- The temperatures and precipitation figures are mainly influenced by the mid-latitude position, low-pressure belt and the mild westerly prevailing winds. The latter are warmed by warm currents, e.g. the Gulf Stream, on the west margin of landmasses. (causality / place)
- The weather is strongly influenced by variations in the position, pattern and amplitude of the jet stream influencing the passage of westerly moving depressions along the polar front with intervening spells of anticyclonic conditions. (causality / place / scale / time)
- Jet streams are narrow ribbons of fast-flowing air that are found at altitudes of around 35,000ft. They play a key role in bringing weather systems to Britain from America across the Atlantic. (causality / place / scale / time)

AO2

Application of knowledge and understanding is deployed to evaluate the influence of air masses on the weather in Wales and the United Kingdom.

Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Although reference to air masses gives an important indication of expected weather, there are other important influences including altitude, latitude and the influence of the Atlantic Ocean. (causality)
- The weather of an area is influenced by a combination of factors, including air masses (interdependence). For example, when a tropical maritime air mass reaches the UK it brings with it low cloud and drizzle to windward coasts and hills, but to the lee of high ground, the cloud often breaks up and here the weather, particularly in the summer months, can be fine and sunny (place / scale / temporal scale)
- Where an air mass hits Wales and the UK determines how its passage is modified as it crosses the country. Polar Maritime air brings cold wet air and rain to north west Scotland and north west Wales, but it is drier as it reaches the south east. (inequality / place / scale / temporal scale)
- Air temperature of the air mass is modified by the land over which it crosses, potentially becoming colder in winter, or warmer in summer. The instability of an air mass depends very much on the temperature of the surface it is travelling over. (causality / temporal scale)
- The scale of analysis is important. In some regions where the weather is influenced by a particular air mass, locally human activities can modify or intensify (feedback) weather characteristics such as in built up areas, creating an urban ‘heat island’. On a global scale, climate change is having an increasing influence on the UK’s weather characteristics, mainly associated with extremes of precipitation and temperature (place / scale / thresholds)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments, which evaluate the influence of air masses on the weather in Wales and the United Kingdom.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions, which evaluate the influence of air masses on the weather in Wales and the United Kingdom.

Credit other valid approaches.

14. Evaluate the success of strategies used to mitigate and adapt to climate change at the national scale. [22 marks]
AO [9] AO [11] AO3 [2]

Focus: 4.5.4 and 4.5.7

Indicative content

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

Likely themes and specialised concepts include:

AO1

Knowledge and understanding could include:

- Replacing fossil fuel consumption with renewable energy options – solar, wind, biogas, HEP, geothermal (mitigation / scale / sustainability)
- Energy conservation. Governments encourage citizens to insulate homes, switch to energy efficient light bulbs, avoid leaving appliances on stand-by. Developers are urged to build zero-carbon homes (mitigation / scale / sustainability)
- Transport policies to reduce congestion and air pollution. e.g. tax reduction on small cars (mitigation / scale / sustainability)
- Recycling policies to reduce emissions from manufacturing and costs and emissions from landfill (mitigation)
- Carbon offsetting. Governments can buy carbon offsets to meet emissions targets (mitigation / place / scale / sustainability)
- Change behaviour. Education programmes that encourage energy conservation (mitigation / place / scale / sustainability / time)
- Research. Governments promote technological solutions such as drought resistant crops (adaptation / resilience)
- Forestry. Policies that limit deforestation and conserve and restore existing forests (mitigation / place / / scale / sustainability)
- Relocate. Abandon areas for less risky location e.g. Kiribati (adaptation / risk)
- Share the loss. As costs occur, relief is provided by governments (adaptation)
- Modify the threat. Costs are reduced by some form of protection e.g. a flood barrier (adaptation / resilience)

AO2

Application of knowledge and understanding is deployed to evaluate the success of strategies used to mitigate and adapt to climate change at the national scale. Synthesis will be demonstrated by the drawing together of evidence to reach a rational conclusion. The evidence could include:

- Comparing and contrasting the strategies presented (place / resilience / scale / sustainability)
- An evaluation of the relative success of the strategies presented (place / resilience / scale / sustainability / time)
- The scale of the strategy. Comparison may be made between the success of strategies implemented at the national level with those at an international scale. (scale)

- Relative merits of different strategies. Renewables are unlikely to take over from fossil fuels as they involve considerable investment and new infrastructure whilst energy conservation measures provide an attractive option as it saves the consumer money (mitigation)
- Comparison of improvements in levels of sustainability of similar strategies employed in different environments (place)
- Improvements in the success of strategies over time (time)
- The interdependence of schemes implemented at a national level. (interdependence)
- Some national strategies are introduced in response to international agreements or supranational (EU) directives (globalisation)

AO3

Skills evidenced could include:

- The skill of presenting well-constructed, coherent and logical arguments which evaluate the success of strategies used to mitigate and adapt to climate change at the national scale.
- The skill of constructing relevant diagrams (qualitative skills) which are annotated to meet the requirements of the question.
- The skill of reaching conclusions which evaluate the success of strategies used to mitigate and adapt to climate change at the national scale.

Credit other valid approaches.