8823 – 5201M

Diploma Programme
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Markscheme

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Geography

Higher and standard level

Paper 1

25 pages

Paper 1 markbands

These markbands are to be used for paper 1 at both standard level and higher level.

Marks	Level descriptor		
	AO1: Knowledge and understanding of specified content **AO2: Application and analysis of knowledge and understanding**	**AO3: Synthesis and evaluation**	**AO4: Selection, use and application of a variety of appropriate skills and techniques**
0	The work does not reach a standard described by the descriptors below.		
1–2	**The response is too brief, lists unconnected information, is not focused on the question and lacks structure.**		
	• The response is very brief or descriptive, **listing** a series of unconnected comments or largely irrelevant information. The knowledge and understanding presented is very general with large gaps or errors in interpretation. Examples or case studies are not included or only **listed**. • There is no evidence of analysis. • Terminology is missing, not defined, irrelevant or used incorrectly.	• No evidence of evaluation or conclusion is expected at this level.	• Information presented is not grouped logically (in paragraphs or sections). • Maps, graphs or diagrams are not included, are irrelevant or difficult to decipher (only if appropriate to the question).
3–4	**The response is too general, lacks detail, is not focused on the question and is largely unstructured.**		
	• The response is very general. The knowledge and understanding presented **outlines** examples, statistics, and facts that are both relevant and irrelevant. Links to the question are **listed**. • The argument or analysis presented is not relevant to the question. • Basic terminology is defined and used but with errors in understanding or used inconsistently.	• If appropriate to the question, the conclusion is irrelevant. • There is no evidence of critical evaluation of evidence (examples, statistics and case studies).	• Most of the information is not grouped logically (in paragraphs or sections). • Maps, graphs or diagrams included lack detail, are incorrectly or only partially interpreted without explicit connections to the question (only if appropriate to the question).
5–6	**The response partially addresses the question, but with a narrow argument, an unsubstantiated conclusion, and limited evaluation.**		
	• The response **describes** relevant supporting evidence (information, examples, case studies et cetera), **outlining** appropriate link(s) to the question. • The argument or analysis partially addresses the question or elaborates one point repeatedly. • Relevant terminology is defined and used with only minor errors in understanding or is used inconsistently.	• If appropriate to the question, the conclusions are general, not aligned with the evidence presented and/or based on an incorrect interpretation of the evidence. • Other perspectives on evidence (examples, statistics and case studies) and/or strengths and weaknesses of evidence are **listed**.	• Logically related information is grouped together (in sections or paragraphs) but not consistently. • Maps, graphs or diagrams included do not follow conventions, and include relevant and irrelevant interpretations in the text (only if appropriate to the question).

<table>
<tr><td>7–8</td><td colspan="3">The response addresses the whole question, the analysis is evaluated and the conclusion is relevant but lacks balance.</td></tr>
<tr><td></td><td>• The response describes relevant supporting evidence correctly (information, examples and case studies) that covers all the main points of the question, describing appropriate links to the question.
• The argument or analysis is clear and relevant to the question but one-sided or unbalanced.
• Complex terminology is defined and used correctly but not consistently.</td><td>• If appropriate to the question, the conclusion is relevant to the question, aligned with the evidence but unbalanced.
• Other perspectives on evidence (examples, statistics and case studies) and/or strengths and weaknesses of evidence are described.</td><td>• Logically related information is grouped together (in sections) consistently.
• Maps, graphs or diagrams included contribute to/support the argument or analysis (only if appropriate to the question).</td></tr>
<tr><td>9–10</td><td colspan="3">The response is in-depth and question-specific (topic and command term); analysis and conclusion are justified through well-developed evaluation of evidence and perspectives.</td></tr>
<tr><td></td><td>• The response explains correct and relevant examples, statistics and details that are integrated in the response, explaining the appropriate link to the question.
• The argument or analysis is balanced, presenting evidence that is discussed, explaining complexity, exceptions and comparisons.
• Complex and relevant terminology is used correctly throughout the response.</td><td>• If appropriate to the question, the conclusion is relevant to the question, balanced and aligned with the evidence.
• Evaluation includes a systematic and detailed presentation of ideas, cause and effect relations, other perspectives; strengths and weaknesses of evidence are discussed; (if appropriate) includes justification of the argument and conclusion.</td><td>• Response is logically structured with discussion (and if appropriate to the question, a conclusion) focusing on the argument or points made, making it easy to follow.
• Maps, graphs or diagrams are annotated following conventions and their relevance is explained and support the argument or analysis (only if appropriate to the question).</td></tr>
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Section A

Option A — Freshwater

1. (a) (i) State the peak rainfall, in millimetres, for the storm. **[1]**

8

(ii) State the time difference, in hours, between the peak discharges at point **A** and point **B**. **[1]**

26

(b) Outline **one** reason for the short lag time for river **X**, a rural drainage basin. **[2]**

*Award **[1]** for the reason and **[1]** for development / explanation*.

For example, short lag time is caused by a deforested/unvegetated drainage basin **[1]** which has rapid run-off and limited interception **[1].**

Other reasons include:
- Type and duration of rainfall
- Snow melt
- Antecedent rainfall
- Shape/size of drainage basin
- Slope/geology/soil of drainage basin.

*Do not accept aspects of urbanization as these are **rural** drainage basins.*

(c) Explain **two** advantages of an integrated drainage basin management (IDBM) plan. **[3 + 3]**

*Award **[1]** for each advantage and up to **[2]** for development / explanation in each case.*

For example, the IDBM coordinates the management of water for the river basin **[1]** in order to allow equitable use for farmers/domestic users **[1]** providing a reliable/high quality water supply **[1]**.

Other advantages (maybe economic, political, environmental, social) include:
- Provides a holistic framework for coordination between different stakeholders
- Coordinates conservation of water/land/resources in the drainage basin
- Protects ecosystems – fish, wildlife
- Enhances the importance of sustainability
- Provides a long-term vision for the river basin.

*Award a maximum of **[4]** if the candidate focuses merely on a dam.*

2. (a) Evaluate the effectiveness of **two or more** different ways of mitigating flood risk. **[10]**

Marks should be allocated according to the markbands.

The increase in frequency, magnitude and severity of river flooding has become a serious hazard, especially in urban and densely populated rural areas, resulting in considerable injury, loss of life and damage to property. It is important that flood mitigation measures are implemented in different drainage basins. Ways include hard and soft engineering, planning, and flood warning technology. Flood mitigation measures may occur at different scales, from individual households to larger communities and at a national level.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Ways include measures to reduce the magnitude and frequency of floods, and measures to mitigate the damage caused by floods to communities and property.
- On a larger scale, such as a drainage basin, flood mitigation includes both hard and soft engineering, planning, management, and flood prediction.
- Hard engineering includes dams, levée strengthening, and channel modification. Soft engineering includes changes in land use, afforestation, creation of wetlands. Planning includes land use zoning and flood warning systems.
- Flood mitigation implemented by households includes increased awareness, flood proofing of buildings and insurance.
- The effectiveness of various measures will depend on their success, cost and reduction in flood risk faced by communities. Small-scale, relatively cheap, local measures may be more cost-effective than expensive, large-scale schemes.
- Some schemes, while being effective in one area, may cause an increase in flooding further downstream.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement in a way that examines the varying effectiveness of different flood mitigation measures. These may vary between different <u>places</u>, at varying <u>scales</u>, for different communities. The relative <u>power</u> of different stakeholders in relation to implementation of measures might also be considered. Another approach might be to examine flood mitigation measures in contrasting places at different levels of economic development.

For 5–6 marks, expect weakly-evidenced outlining of one or more flood mitigation measures

For 7–8 marks, expect a structured account which includes:

- <u>either</u> an evidenced explanation of the effectiveness of two or more mitigation measures
- <u>or</u> a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives, possibly examining future possibilities for mitigation.

For 9–10 marks, expect <u>both</u> of these traits.

2. (b) Examine the power of different stakeholders in managing the consequences of agricultural activity on water quality. **[10]**

Marks should be allocated according to the markbands.

Agricultural practices have a negative impact on water quality. These include chemical pollution through the release of nutrients, fertilizers, pesticides, and animal waste. Also, irrigation practices may result in salinization. Farms discharge large quantities of organic matter and sediments into water bodies. Stakeholders concerned in the management of the consequences of agriculture on water quality include farmers, industrial and domestic consumers, water companies, and governments. Each have different priorities, perspectives and power; their interests may be in conflict and difficult to reconcile.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Stakeholders include farmers, industrial and domestic consumers, environmentalists and water companies, governments. Each have different priorities and interests, which may be in conflict and difficult to reconcile.
- Agriculture has a major impact on water quality, through chemical pollution from pesticides and fertilizers, animal waste, and sediment from soil erosion. Also, salinization resulting from irrigation.
- Other effects include eutrophication, as well as impacts on biodiversity, aquatic ecosystems and on human health.
- Management strategies might include reducing discharges of chemicals and animal waste, improving irrigation techniques to reduce salinization, and changing land use to reduce sediment runoff.
- Management is challenging, partly because of the conflicting views and perspectives of different stakeholders, as well as cost issues.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement in a way that examines the possibilities for management, and the varying power and conflicting views of different stakeholders. Another approach might be to examine management problems for different places at varying levels of development.

For 5–6 marks, expect weakly-evidenced outlining of at least one consequence of agricultural practices on water quality.

For 7–8 marks, expect a structured account which includes:

- either an evidenced explanation of the consequences of agricultural activity on water quality, and the power of different stakeholders in management.
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives, possibly examining future ideas for management.

For 9–10 marks, expect both of these traits.

Option B — Oceans and coastal margins

3. (a) (i) Identify the island in the Galápagos that lies on the equator (0°). **[1]**

Isla Isabela

(ii) Estimate, in km^2, the area of Isla San Cristóbal. **[1]**

Allow answers between 750 - 1000

(b) Apart from banning fishing, outline **one** other reason why the newly protected areas were created. **[2]**

*Award **[1]** for a reason and **[1]** for explanation / development.*

For example: To preserve the biodiversity of the area **[1]** by reducing the amount of disturbance to wildlife **[1]**.

Other reasons include:
- To allow scientific research
- To promote ecotourism
- To stop the extraction of other natural resources, like oil and gas

(c) Explain **two** strategies (**other than** marine reserves) to reduce overfishing. **[3 + 3]**

*Award **[1]** for the strategy and up to **[2]** for further development/explanation/exemplification.*

For example, introducing fishing quotas **[1]** which limits the amount of fish caught per fishing boat **[1]** for example, EU's Common Fisheries Policy **[1]**.

Other possibilities include:
- Establishing aquaculture
- Closing of fishing areas / having set season length / restricting time at sea / monitoring size and number of boats
- Increasing mesh size – reducing the catching of juvenile fish
- Satellite and logbook surveillance and penalties for illegal landings.

4. (a) Examine the causes of ocean acidification **and** the possible impacts on coral reefs. **[10]**

Marks should be allocated according to the markbands.

Oceanic waters have become increasingly acidic in recent times. This acidification has possible serious consequences on coral reefs and other marine organisms and ecosystems. The oceans play a critical role in capturing CO_2 from the atmosphere. The CO_2 dissolves in water to form a weak acid. The oceans have absorbed about a third of the atmospheric CO_2 resulting from human activities, such as urban and industrial pollution, leading to a steady decrease in ocean pH levels. With increasing atmospheric CO_2, the chemical balance will change even more during the next century. Ocean acidification is an important threat to coral reef ecosystems, because it reduces the availability of carbonates that reef building corals need to produce their skeletons. However, the effect on coral reefs is not straightforward; not all reefs are affected in the same way.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):
- The role of the oceans as a store/sink of carbon dioxide (CO_2)
- Oceans have become increasingly acidic in recent times, due mainly to high levels of atmospheric CO_2
- Increases in atmospheric CO_2 is mainly due to human activities, such as urban and industrial pollution
- Acidification of the oceans has significant impacts on coral reef ecosystems, crustacea, and marine food chains. Reef building organisms are lacking in carbonates to produce their skeletons
- However, the relationship between oceanic acidification and coral reef ecosystems is not clear. Some parts of the world are being affected more than others, and in some areas certain species of coral are re-growing
- Impacts of CO_2 on coral reefs are not solely acidification; rise in global temperatures (global warming from rise in CO_2) may lead to bleaching.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement in a way that examines the processes affecting the role of the oceans as a carbon store, how these have changed over time and the effects on marine ecosystems in different places. Another approach might be to examine the scale of the threats for different places.

For 5–6 marks, expect weakly-evidenced outlining of at least one cause of ocean acidification, **and/or** the impacts on coral reefs.

For 7–8 marks, expect a well-structured account, which includes:
- either an evidenced explanation of the causes of ocean acidification, and possible impacts on coral reefs (do not expect balance).
- or a discursive conclusion, possibly recognizing that not all reefs are affected in the same way, as more research is needed, and considering possible scope for management.

For 9–10 marks, expect both traits.

4. (b) Examine how changes in relative sea level result in the formation of **two or more** coastal landforms. **[10]**

Marks should be allocated according to the markbands.

Changes in relative sea level are caused by isostatic, tectonic and eustatic processes, resulting in submergent and emergent coastal landforms. Eustatic processes are associated with the advance and retreat of glaciers and ice caps, as well as thermal expansion, resulting in changes in world-wide sea levels. Isostatic and tectonic processes are more local, involving uplift or depression of the Earth's crust. Coastal landforms on emergent coastlines include raised beaches and relict (fossil) cliffs. Submerged coasts include landforms such as rias and fjords.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Changes in relative sea levels may be caused by isostatic, tectonic or eustatic processes, or a combination
- Emergent coastlines cause a fall in relative sea level, leading to the formation of raised beaches and relict cliffs
- Relict cliffs are steep slopes formerly eroded by the sea and now raised above sea level. They may contain wave-cut notches, caves and arches, showing evidence of former marine erosion
- Raised beaches are flat surfaces which were formerly wave-cut platforms or beaches. They may occur in front of relict cliffs and covered by sand or rounded pebbles
- Submerged coastlines are caused by a relative rise in sea level; the coastline is "drowned"
- Fjords are drowned glacial valleys; relatively deep and straight. Rias are drowned former river valleys, with a sinuous profile.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement in a way that examines the processes resulting in changes in sea level and associated landforms in different places. Another approach might be to examine the effects of relative sea level changes over time, recognizing that both emergence and submergence may occur in the same place at different times.

For 5–6 marks, expect weakly-evidenced outlining of the formation of one or more landforms resulting from changes in sea level.

For 7–8 marks, expect a structured account which includes:

- either an evidenced explanation of the formation of two or more coastal landforms resulting from changing sea levels.
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives. They may recognize that sea level can both rise and fall in the same area resulting in a complex landscape.

For 9–10 marks, expect both of these traits.

Option C — Extreme environments

5. (a) (i) Identify which type of sand dune requires strong wind and a small amount of sand. **[1]**

Longitudinal dunes

(a) (ii) Estimate the minimum percentage of sand required for the formation of transverse dunes. **[1]**

35 (Accept answers between 30–40)

(b) Outline **one** reason why vegetation is important in dune formation. **[2]**

*Award **[1]** for a reason and **[1]** for development.*

For example: The vegetation reduces wind velocity **[1]** so that sand is deposited **[1]**.

Other reasons include:
- The role of root systems in stabilization
- Decaying vegetation increases organic matter in the soil

(c) Explain **two** weathering processes that occur in hot arid environments. **[3 + 3]**

*Award **[1]** for each named process and up to **[2]** for development / explanation.*

For example: Exfoliation / onion skin weathering **[1]** occurs due to repeated heating and cooling of rock **[1]** causing repeated expansion and contraction and layers peel away **[1]**.

Other possibilities include:
- Granular and block disintegration
- Freeze-thaw
- Salt crystal growth
- Chemical weathering (hydrolysis)

6. (a) Examine the challenges for local stakeholders caused by tourism in extreme environments. **[10]**

Marks should be allocated according to the markbands.

The growth of tourism in extreme environments has resulted in significant challenges for local stakeholders. Extreme environments include cold and high-altitude, and hot arid. Due to physical challenges these areas were formerly often isolated and sparsely populated. Tourism has resulted in a large influx of people, together with developments in settlement, infrastructure, and tourist facilities, resulting in pressures on local people, their economy and physical environment.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Local stakeholders include: farmers, businesses (touristic and others), politicians, environmentalists, indigenous peoples
- Challenges for local stakeholders may be environmental, economic, and social – this creates conflict/tension
- Environmental pressures include significant landscape changes, damage to fragile ecosystems, different types of pollution
- Economic challenges include ownership, employment, conflict between local and large international tour operators, economic leakage, and increased prices for land and property
- Stress on local infrastructure e.g. roads, water supply, power
- Social challenges include loss of traditional lifestyles and customs, and exploitation
- Consideration should be given as to how these challenges might be managed, and turned into opportunities for local stakeholders.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement in a way that examines the power and challenges for local stakeholders in different places, and possibilities for mitigation. Another approach might be to examine the extent to which the challenges might be successfully managed, or to compare the scale of the challenges.

For 5–6 marks, expect weakly-evidenced outlining of at least one challenge caused by tourism for local stakeholders in an extreme environment.

For 7–8 marks, expect a structured account which includes:

- either an evidenced explanation of a variety of challenges caused by tourism for different local stakeholders in extreme environments
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives.

For 9–10 marks, expect both of these traits.

6. (b) To what extent can the causes of desertification be successfully managed? **[10]**

Marks should be allocated according to the markbands.

Desertification is a major environmental challenge in arid and semi-arid regions, caused by various factors, including climatic change and human activities such as overgrazing, removal of vegetation cover, soil exhaustion and misuse of water resources. Addressing the causes of desertification is critical in the eradication of poverty in vulnerable human populations. This will help improve environmental sustainability. Management strategies should be implemented at the local and global scales, with the active engagement of stakeholders and local communities.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Causes include climatic change and human activities such as population pressure, overgrazing, removal of vegetation cover, soil exhaustion and misuse of water resources.
- Management involves different stakeholders at local, national, and international levels.
- Management strategies might include restoring vegetative cover for soil conservation and against wind and water erosion; planting trees; reducing overgrazing; soil conservation; water management; drought resistant crops.
- Global efforts to combat climate change which might affect rainfall.
- Reducing population pressure might allow restoration of soil fertility and managing the water supplies.
- Some causes of desertification might be more easily managed than others – e.g. climate change versus local initiatives – at different scales, and over differing time periods.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) which examines the challenges of combatting desertification in different places and time scales. Another approach might be to look at the varying power of different stakeholders and the possibilities for change.

For 5–6 marks, expect weakly-evidenced outlining of at least one cause and/or management of desertification.

For 7–8 marks, expect a well-structured account which includes:

- either an evidenced discussion of different management strategies to combat the causes of desertification
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives.

For 9–10 marks, expect both of these traits.

Option D — Geophysical hazards

7. (a) Using evidence from the diagram, identify **one** effect of mass movement on:

(i) the human landscape; **[1]**

cracked and uneven road; tilted power poles; cracks in house; broken fence

(ii) the physical landscape. **[1]**

dead trees; cracks (in soil); hummocks / ridges / slump / surface slip

(b) Outline **one** way in which human activity may increase the instability of a slope. **[2]**

*Award **[1]** for a valid human activity and **[1]** for development / explanation.*

For example: Undercutting a slope for building roads **[1]** reduces the resistance to gravity by removing support **[1]**.

Other possibilities include:
- Building on steep gradients
- Deforestation
- Mining/waste heaps
- Disturbing drainage.

(c) Explain why vulnerability to mass movement hazards might vary between communities due to:

(i) **one** economic reason; **[3]**

*Award **[1]** for a valid reason and up to **[2]** for development.*

For example: The wealthier the community **[1]** the more able they are to invest in research about geology of the slope **[1]** and use retaining walls to prevent damage to roads **[1]**.

Other possibilities include:
- Insurance for domestic/business
- Compensation from the government
- Quality of the building/materials

(ii) **one** social reason. **[3]**

*Award **[1] for** a valid reason and up to **[2]** for development.*

For example: Education levels about risks of landslides vary between communities **[1]** and good levels of education would mean people choose to live elsewhere **[1]** reducing death and injury **[1]**.

Other possibilities include:
- Perception
- Population characteristics
- Healthcare.

8. (a) Examine reasons why some high-magnitude earthquakes have **low**-level impacts on people and property. **[10]**

Marks should be allocated according to the markbands.

The impact of earthquakes is influenced by both geophysical and geographic factors. The magnitude and frequency of earthquakes is significant. High magnitude, low frequency earthquakes may be very destructive of people and property. However, not all high magnitude earthquakes have the same impacts – these will vary according to factors such as location of epicentre, and human factors such as level of preparedness, population density, rural/urban location, economic development, and degree of isolation.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):
- High magnitude, low frequency earthquakes are often very destructive with intense shaking and tsunami/landslides/liquefaction
- Different places are more vulnerable than others to large earthquakes
- The impact of earthquakes varies with geophysical factors, such as type of plate margin and depth/location of epicentres
- Human factors such as population density, level of economic development, time of day and degree of isolation, and levels of preparedness affect the level of impact.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which examines the relationship between magnitude/power of earthquakes and the scale of impacts in different places. Another approach might be to examine how the relationship affects areas at different levels of development, and how this may change over time.

For 5–6 marks, expect weakly-evidenced outlining of at least one reason why some high magnitude earthquakes have low impacts.

For 7–8 marks, expect a structured account which includes:
- either an evidenced explanation of reasons why high magnitude earthquakes may have low impacts on people and property
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives.

For 9–10 marks, expect both of these traits.

8. (b) To what extent are pre-event management strategies successful in reducing vulnerability to volcanic hazard events? **[10]**

Marks should be allocated according to the markbands.

Population growth in both rural and urban areas is increasingly occurring in regions subject to hazardous volcanic activity, especially on destructive plate margins around the Pacific Ring of Fire. Violent, explosive, volcanic activity, accompanied by ash falls, pyroclastics, lahars, lava flows, and sometimes large tsunami, pose a significant risk to populations and places. Management strategies undertaken prior to a major eruption might reduce vulnerability at the local and wider scale. To be effective, management strategies should understand magnitude, frequency, and timing of possible future events, so that effective measures might be taken to reduce human vulnerability.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Magnitude/frequency analysis is important for knowledge of probability of future volcanic events; but these are not accurate forecasts
- Mapping of active volcanic areas, and monitoring of craters to try and predict likelihood/timing of future eruptions, including GPS monitoring, seismic activity and changes in chemistry
- Hazard risk mapping; land use zoning of hazard prone areas. Assessment of risk from lava flows, and possible tsunami
- Early warning systems and evacuation plans/routes in case of eruptions
- Success of strategies depend on available technology and funding. Also, awareness of past volcanic activity in an area, and previous experience of accuracy of warnings
- Rural areas in low-income countries remain vulnerable, compared with people in high income countries.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which examines the success and cost of management strategies in different places at varying scales, and the roles and power of various stakeholders. Another approach might be to compare effectiveness in different places at varying levels of economic development.

For 5–6 marks, expect weakly-evidenced outlining of the success of at least one pre-event management strategy.

For 7–8 marks, expect a structured account which includes:

- either an evidenced examination of the success of pre-event management strategies in reducing vulnerability
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives, assessing the effectiveness of strategies.

For 9–10 marks, expect both of these traits.

Option E — Leisure, tourism and sport

9. (a) (i) Identify the type of building found at grid reference 268236. **[1]**

Youth hostel – only answer

(ii) State the height difference, in metres, between spot heights **X** and **Y** on the map. **[1]**

135

(b) Using map evidence, outline **one** reason why the area around Keswick might be suitable as a festival site. **[2]**

*Allow **[1]** for reason and **[1]** for development using map evidence.*

For example: Keswick is accessible **[1]** as shown by the good communication links (main road / bus station) **[1]**.

Other possibilities include:
- Accommodation / camping sites
- Scenery
- Flat land.

(c) Explain **two** management strategies to increase site resilience in rural tourist hotspot areas. **[3 + 3]**

*Award **[1]** for describing a relevant management strategy, and up to **[2]** for further development / explanation of how it increases site resilience.*

For example: Establishing National Parks/conservation areas **[1]** which seek to provide information/education about the environment **[1]** and help to maintain/conserve the rural area for the future **[1]**.

Possible strategies include:
- Limiting visitor numbers
- Constructing new footpaths / boardwalks
- Banning off-road vehicles
- Limiting the purchase of second homes
- Developing eco-tourism
- Rubbish bins / waste facilities.

10. (a) Examine the benefits and costs for different stakeholders of the involvement of transnational corporations (TNCs) in expanding tourism. **[10]**

Marks should be allocated according to the markbands.

TNCs have been central in the growth and globalization of international tourism in recent decades. They dominate the tourist industry, including transportation, accommodation, cheap package holidays, and the development of tourist resorts around the world. Benefits for stakeholders might include employment, increased standard of living, higher wages and the possibility of promotion. However, there have also been significant costs to different stakeholders at different scales. The costs are environmental, social, economic, and political.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- TNCs dominate the international tourism industry (e.g. transportation, accommodation, package holidays)
- TNCs are the main reason for the development of mass tourism
- They bring significant development to low-income countries and communities (e.g. revenues, employment, infrastructure); raising living standards through the multiplier effect
- Development of tourist resorts attracts international tourists
- However, there are significant costs, including leakage of revenues, low-paid employment, damage to heritage sites and local customs
- Uneven development, as tourist resorts are “islands of development in seas of poverty”.

Good answers may be **well structured** (AO4) and may additionally offer a **critical examination** (AO3) of the statement which examines the benefits and costs of TNC involvement for different stakeholders. Compares the roles and power of stakeholders in different places and scales. Another approach might be to consider the possibilities for change, to reduce the costs for stakeholders.

For 5–6 marks, expect weakly-evidenced outlining of at least one benefit and/or cost of TNCs in expanding tourism.

For 7–8 marks, expect a structured account which includes:

- either an evidenced explanation of the benefits and costs for different stakeholders of TNC involvement in expanding tourism
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives, assessing the relative benefits and costs.

- **For 9–10 marks**, expect both of these traits.

10. (b) To what extent is participation in leisure activities in different societies related to economic development? **[10]**

Marks should be allocated according to the markbands.

There has been a significant growth in participation in different leisure activities, linked to economic development in different societies. Economic development has brought an increase in leisure time and holidays, but the cost of some leisure activities is prohibitive in some societies. Other factors such as attitudes to gender and stage in lifecycle may also be important. There is also variation in types of leisure activity, from sports and tourism to more sedentary activities such as watching TV, which are linked to factors other than economic development.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Growth in participation is linked to increasing disposable incomes and personal affluence, increasing leisure time and fewer working hours
- Economic development is also accompanied by increased investment in leisure infrastructure, greater opportunity and choice for leisure
- Increased participation may also result in greater investment in leisure facilities, resulting in economic development
- Improvements in transport and communications, including social media, increasing exposure/access to new leisure activities
- Cost of some leisure activities is prohibitive to less affluent people and communities. Some leisure activities are associated with more affluent groups and others with less well-off societies
- Culture and religion, and demographic factors, such as stages in lifecycle; also, political factors like government influence. Promotion of activities to support mental and physical health
- Other factors also influence participation, including changing attitudes towards gender, race and disability.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which examines the role of economic development, and of other factors, on participation in societies from <u>perspectives</u> of different stakeholders. Another approach might be to examine changes in participation in different <u>places</u> and on varying <u>time</u> and spatial <u>scales</u>, which might vary within a community or between countries.

For 5–6 marks, expect weakly-evidenced outlining of at least one relationship between participation and economic development and/or other factors.

For 7–8 marks, expect a structured account which includes:

- <u>either</u> an evidenced examination of the extent to which economic and other factors affect participation in leisure activities in different societies
- <u>or</u> a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives.

- **For 9–10 marks**, expect both of these traits.

Option F — Food and health

11. (a) (i) State the number of USA states in 2016 that had an obesity level of ≥35%. **[1]**

5

(ii) Using a compass direction, identify the area of the USA that has mainly 20–24% obesity levels in 2008. **[1]**

North-West / West

(b) Outline **one** possible reason why most of the USA states showed increased levels of obesity in 2016. **[2]**

*Award **[1]** for the reason, and **[1]** for explanation / development.*

For example: Increased consumption of fast foods **[1]**, meaning more saturated fats are consumed **[1]**.

Other reasons include:
- More sedentary lifestyle / lack of exercise
- Greater use of computers/laptops/smartphones – less exercise
- Lifestyle choices
- Poor education
- Poverty levels.

(c) Explain **two** consequences of the disease burden on society resulting from an ageing population. **[3 + 3]**

*Award **[1]** for each valid consequence, and up to **[2]** for further development / explanation.*

For example: Expenses to the taxpayer / family **[1]** as there are more old people with dementia **[1]** who need special care **[1]**

Other possibilities include:
- Cost of medication
- Higher demand for hospital specialists / training in elderly care
- Surgery costs (e.g. hip and knee operations for Arthritis)
- Mental health issues (e.g. related to loneliness / Covid-19)
- Mortality.

12. (a) To what extent are agribusiness transnational corporations (TNCs) the most important influence on food consumption habits? **[10]**

Marks should be allocated according to the markbands.

Agribusinesses are dominant in global food productions systems, and hence play a major role in influencing food consumption. They control most aspects of the food chain, such as production, processing, sales, prices, and advertising. The purchase of food by consumers is influenced by price and convenience. This has led to an increase in processed foods, ready meals, fast food, and soft drinks, resulting in increased levels of obesity and heart disease. Globalization means that the nutrition transition also affects low-income countries. Also important are education, levels of wealth, media, culture, and health concerns.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):
- Agribusinesses increasingly dominate food production systems, from production to processing and manufacture, distribution, and sales
- They influence what is grown, where, and at what price
- Consumers enjoy low-cost foodstuffs, low prices, and convenience. Increased demands for processed foods and fast food
- Low prices influence purchase of fast and processed foods by low income groups; unequal influence on health
- Exotic foods available all year round
- Link between media advertising and agribusiness, affecting dietary choices
- Globalization means that nutrition transition affects low-income countries, with rising incomes and urban lifestyles.
- Other factors also affect dietary choice – e.g. education, levels of wealth, media, culture, and health concerns.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which examines the power of agribusinesses, and related stakeholders, such as the media, in influencing dietary choices of people in different places and time. Another approach might be to examine people are overcoming the influence of TNCs by favouring local, independently produced foodstuffs with a low carbon footprint.

For 5–6 marks, expect weakly-evidenced outlining of at least one way that agribusiness TNCs may influence food consumption habits.

For 7–8 marks, expect a structured account which includes:
- either an evidenced discussion of the extent to which agribusiness TNCs influence food consumption habits
- or a discursive conclusion (or ongoing evaluation) of the relative importance of TNCs, recognizing that other factors also influence food consumption habits.

For 9–10 marks, expect both of these traits.

*Note. McDonalds is a TNC but not an agribusiness TNC so any response dealing **only** with a fast food TNC receives a maximum of 4.*

12. (b) To what extent do economic factors influence the diffusion of disease? **[10]**

Marks should be allocated according to the markbands.

Globalization, improved communications, and the increasing movement of people between different places has contributed to the diffusion of diseases in recent years. Some diseases may diffuse rapidly over a wide area. The rate and extent of diffusion of disease is influenced by economic factors, such as wealth and poverty, investment in health care to prevent and treat disease, and amount of travel between places. Other factors are also important in affecting diffusion. These include physical (climate, isolation), social and political factors.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Reference may be made to one or more diseases. The rate and type of diffusion (relocation, expansion) will vary according to the type of disease
- Economic factors the affect the extent and rate of diffusion in different places. These apply at different scales, from local to national and international
- Inequalities in levels of wealth and poverty play an important role – low-income groups, (because of quality of life) are more prone to disease and may have limited access to basic medical care. Richer communities more able to limit and control disease diffusion
- Economic factors may also include research into disease, availability of effective vaccinations, and cures
- Other factors also play an important role in diffusion. These include physical factors, degree of isolation, population density. Political factors, including quarantine, restrictions on movement, promotion of relief and health care, education are also important.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which examines ways in which economic factors affect the rate and extent of diffusion between different <u>places</u>. The importance of other factors should also be considered and evaluated.

For 5–6 marks, expect weakly- evidenced outlining of at least one economic factor influencing the diffusion of disease.

For 7–8 marks, expect a structured account which includes:

- <u>either</u> an evidenced discussion of the extent to which economic and other factors influence the diffusion of disease
- <u>or</u> a discursive conclusion (or ongoing evaluation) of the relative importance of economic and other factors.

- **For 9–10 marks**, expect both of these traits.

Option G — Urban environments

13. (a) (i) Estimate the carbon footprint, in millions of tonnes of CO_2, of New York. **[1]**

Allow answers between 230–240

(ii) State the relationship between population and carbon footprint. **[1]**

Positive / the lower the population, the lower the carbon footprint, or vice versa

Accept no relationship shown

(b) Outline **one** reason why some small cities have very high carbon emissions. **[2]**

*Award **[1]** for a valid reason and **[1]** for development / explanation.*

For example: Some small cities use large amounts of fossil fuel for electricity generation **[1]** in order to heat/cool homes **[1]**.

Other reasons include:
- High vehicle ownership
- Manufacturing
- High consumer economy
- Personal wealth allows disproportionate usage.

(c) Explain **two** eco city design strategies to reduce the urban ecological footprint. **[3 + 3]**

*Award **[1]** for a relevant design strategy and up to **[2]** for explanation / development / exemplification that shows how the design attempts to manage the urban ecological footprint.*

For example: Installing solar panels on houses **[1]** so that a renewable resource is used for hot water / heating / lighting **[1]** thereby decreasing fossil fuel dependence **[1]**.

Other possible strategies include:
- Waste production limited (recycling)
- Green spaces provided
- Reclaiming brownfield sites
- Circular economy
- Modifications / retrofitting to existing houses e.g. double glazing
- Having a good public transport system – reducing private vehicles.

Allow smart city technologies that link to ecological benefit.

14. (a) Evaluate the success of strategies to reduce the impacts of air pollution on people in **one or more** urban areas. **[10]**

Marks should be allocated according to the markbands.

Urban air pollution is a major concern in cities around the world. Growing urban populations and industry, together with increased volumes of traffic, have resulted in severe air pollution, affecting public health and the environment. Urban air emissions are also a major contributor to global warming. Management strategies should address the short- and long-term causes of air pollution, and help the city achieve sustainable growth. Management strategies include monitoring of distribution and sources of pollution, ways of reducing pollution from domestic, industry and transport, and planning for a sustainable future.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):
- High levels of air pollution are associated with population growth, industry, and increased volumes of traffic, burning fossil fuels, and emitting toxic gases and particles
- Air pollution has a major impact on human health, the environment, and global climate
- Management strategies, aimed at reducing the impacts on people, rely on monitoring of sources, spatial distribution and effects of pollution on human health
- Stakeholders at local, regional, and national scales, have a key role in planning for a sustainable future
- Strategies might include reducing reliance on fossil fuels in homes, industry and transport
- Reducing traffic volumes in congested areas, development and encouraging use of public transport
- The role of education, incentives, and laws to reduce pollution
- Success will also partly depend on levels of wealth and poverty.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which examines ways in which urban air pollution may be successfully managed. The power and perspectives of different stakeholders, and how successful management may vary between different places. Another approach might be to focus on the contribution of managing air pollution to development of sustainable cities.

For 5–6 marks, expect weakly-evidenced outlining of at least one way of reducing the impacts of urban air pollution.

For 7–8 marks, expect a structured account which includes:
- either an evidenced explanation of strategies to reduce the impact of air pollution on people
- or a discursive conclusion (or ongoing evaluation) of the success of management policies in reducing the impact of air pollution on people.

For 9–10 marks, expect both of these traits.

14. (b) To what extent has urban growth been accompanied by improvements in infrastructure? **[10]**

Marks should be allocated according to the markbands.

The speed and scale of urban growth, especially in low-income countries, brings challenges to the improvement in infrastructure, such as power, transport, IT communications, waste/sewage and water. Established cities must also continually upgrade and extend their infrastructure to keep up with demands of economic development, improve living standards and create more sustainable urban environments.

Possible **applied** themes (AO2) demonstrating **knowledge and understanding** (AO1):

- Provision of basic infrastructure (e.g. power, transport, IT communications, waste, water) is essential to people's quality of life and economic growth
- Infrastructure is costly to install, maintain and improve. So, often does not keep pace with urban growth
- Rapid urban growth, especially in low-income countries, is often not accompanied by infrastructure improvement, resulting in power failures, poor communications, poor quality water and sanitation. Living standards suffer as a result
- In established cities, infrastructure must change and upgrade to meet demands of economic growth and rising living standards. Wealthier areas often fare better than poorer areas – resulting in regional inequalities at different scales
- Infrastructure improvements are also necessary for the development of sustainable cities.

Good answers may be **well structured** (AO4) and may additionally offer a **critical evaluation** (AO3) of the statement which shows understanding of the issues surrounding infrastructure development, the power, and perspectives of different stakeholders, and how this varies between different places and scales. Another approach might be to examine how the relationship between urban growth and infrastructure may vary over time, perhaps resulting in a more sustainable future.

For 5–6 marks, expect weakly-evidenced outlining of at least one infrastructure improvement in an urban area.

For 7–8 marks, expect a structured account which includes:

- either an evidenced explanation of the extent to which urban growth has been accompanied by improvements in infrastructure in one or more urban areas
- or a discursive conclusion (or ongoing evaluation) grounded in geographical concepts and/or perspectives, examining the extent to which improvements have occurred.

For 9–10 marks, expect both of these traits.