2225 – 5313M

Diploma Programme
Programme du diplôme
Programa del Diploma

Markscheme

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Geography

Higher level and standard level

Paper 2

14 pages

Paper 2 Section C markbands

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.	• If appropriate to the question, the conclusions are general, not aligned with the evidence presented and/or based on an	• Logically related information is grouped together (in sections or paragraphs) but not consistently. • Maps, graphs or diagrams included do not follow

	• 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.	incorrect interpretation of the evidence. • Other perspectives on evidence (examples, statistics and case studies) and/or strengths and weaknesses of evidence are listed.	conventions, and include relevant and irrelevant interpretations in the text (only if appropriate to the question).
7–8	**The response addresses the whole question, the analysis is evaluated and the conclusion is relevant but lacks balance.**		
	• 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.	• 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.	• 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).
9–10	**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.**		
	• 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.	• 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**.	• 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).

Section A

1. Changing population

(a) (i) State the dependency ratio of Asia in 2020. **[1]**

Accept a range between 47- 49.

(ii) Identify the region in which the dependency ratio decreases between 2020 and 2060. **[1]**

The only acceptable answer is Africa

(b) (i) Explain **one social** challenge that an ageing population might face. **[2]**

*Allow reference to **ageing societies** per se or **the specific elderly population within the ageing society***

*Award **[1]** for a valid **social** challenge, and another **[1]** for development or exemplification.*

For example, increased isolation/loss of social networks **[1]** resulting in loneliness and poor mental health/cognitive decline/depression **[1]**.

Other possibilities could include:

- Strain on healthcare systems – older adults likely to experience chronic/complex health issues.
- Increased dependence on carers/care systems – loss of independence/autonomy/decision-making/pressure on social care systems.
- Ageism – older people face negative stereotyping.
- Limited living arrangements/infrastructure – suitable housing is limited/chair ramps, lifts
- Risk of abuse/neglect – physical/mental abuse by family members or carers.
- Inter- generational relations/stress – allocation of resources/differences in values.
- Loss of culture – nobody to take over.

(ii) Explain **one economic** challenge that an ageing population might face. **[2]**

*Award **[1]** for each valid **economic** challenge and another **[1]** for development or exemplification.*

For example, lower earning potential **[1]** retirement means decrease in income **[1]**.

Other possibilities could include:

- Age discrimination in employment – difficulty in retaining/finding employment, long periods of unemployment.
- Increased healthcare/social care costs – older people have more health issues/chronic conditions.
- Inadequate insurance coverage – older people lack comprehensive care insurance.
- Strain on finances/pensions/savings – people living longer/fewer contributors.
- Shrinking labour force/labour shortage – slower economic growth/loss productivity.
- Reduced innovation/entrepreneurship -decreases long term economic dynamism.
- Increased tax to pay for pensions/care – pressure on independent population.
- Lower savings/investment – older population have less earning power.

(c) Explain how forced migration can be caused by:

(i) conflict; **[2]**

*Award **[1]** for a valid way and another **[1]** for development or exemplification.*

For example: civil war/violence exposes civilians to bombing/gunfire/atrocities **[1]** resulting in threat to life/livelihood/ destruction of homes which forces people to move **[1]**.
Other examples include:

- breakdown of law and order/collapse of state authority **[1]** – unsafe for civilians to remain in their homes **[1]**.
- unexploded ordnance **[1]** – poses a threat to civilians' way of life **[1]**.
- ethnic cleansing **[1]** – forced displacement is a tactic of war **[1]**.
- counter-insurgency operations **[1]** - displace population so cut off support **[1]**.
- destruction of infrastructure **[1]** – makes it difficult for people to live in original locations **[1]**.
- Famine/ poverty/disruption of economic activity as a result of conflict impacting the quality of life **[1]** forcing people to move to area where food/water/shelter/opportunities are available **[1]**.
- Inequality impacting the quality of life **[1]** forcing people to move to area where food/water/shelter/opportunities are available **[1]**.

(ii) persecution. **[2]**

*Award **[1]** for a valid way and another **[1]** for development or exemplification.*

For example, suppression of dissent by governments **[1]** – people move to seek refuge where their rights are respected **[1]**.

Other examples include:

- persecution based on religion resulting in threat to life **[1]** which forces people to move to safer areas **[1]**.
- persecution based on political opinion resulting in threat to life **[1]** which forces people to move to secure areas **[1]**.
- persecution based on national affiliation to a social group resulting in a threat to life/livelihood **[1]** which forces people to move to safer areas **[1]**.
- persecution based on sexual orientation/gender identity **[1]** forces people to move to escape life threatening situations **[1]**.

2. Global climate — vulnerability and resilience

(a) Outline **two** components of the global energy balance. **[2]**

The incoming solar radiation **[1]** and the outgoing terrestrial radiation **[1]**

*Maximum **[1]** if no details of type or direction of radiation.*

Accept other valid wording:

Incoming – shortwave light/ultraviolet radiation
Outgoing – longwave radiation/infrared radiation/sensible heat

(b) Suggest **two** ways in which human activity has changed terrestrial albedo. **[2+2]**

Looking for answers that comments on the reflection of sunlight by Earth's surface - accept land and oceans but not atmosphere.

*In each case, award **[1]** for a relevant human activity that is **linked** to a change in terrestrial albedo and **[1]** for explanation/exemplification of the change in albedo*

Increasing temperatures due to climate change melt snow and ice which reduces the albedo **[1]** – darker ocean surfaces are uncovered which absorbs more sunlight **[1]**.

Deforestation removes trees which generally have a low albedo **[1]** – exposed soil and grass are lighter surfaces and reflect more sunlight **[1]**.

Use of land for agriculture can alter the albedo of an area **[1]** – cropland reflects more light than most natural surfaces/replacing grassland with crops gives reflective bare soil between crops **[1]**.

Use of land for urbanisation often decreases albedo **[1]** – urban areas have dark surfaces/asphalt/concrete which absorb more light than natural surfaces **[1]**.

Desertification removes vegetation which absorbs light and has a lower albedo **[1]** – exposed lighter soils are more reflective and have a higher albedo **[1]**.

(c) Explain **two** ways in which economic development has led to a change in greenhouse gas emissions. **[2+2]**

*In each case, award **[1]** for the way in which economic development has led to change in greenhouse gas emissions **[1]** for explanation/exemplification that identifies the nature of the change*

Responses could explain ways in which economic development leads to increases or ways it decreases the emission of greenhouse gases.

Credit ways which lead an increase in greenhouse gas emissions as well as those which lead a decrease in greenhouse gas emissions

Possible ways which economic development can lead to an increase in greenhouse gas emission include:

- Urbanization through the expansion of urban infrastructure such as road and rail networks etc., require the increased use of fossil fuels to drive machinery, more GHGs such as carbon dioxide are emitted in the process.

- Commercialization of agriculture to expand food productivity - results in the release of more emissions of nitrous oxide, carbon dioxide and methane/through Increased use of fertilizers
- Increased domestic consumption of energy-intensive technologies /lifestyle changes associated with higher incomes - leading to increased use of vehicles with higher fuel consumption capacities, air conditioners/meat production and methane.
- Expansion of manufacturing/industrialization – industrial processes rely on burning of fossil fuels
- Deforestation for commercial uses – carbon dioxide release from organic debris

Possible ways which economic development can lead to a reduction in greenhouse gas emission include:

- Increased drive for technological innovation/use of renewable energy - adoption of energy-efficient practices that reduce greenhouse gas emissions.
- Higher investments in large-scale, government-led climate change mitigation and adaptation projects - such as renewable energy infrastructure that reduce greenhouse gas emissions.
- Wealthier nations have stricter standards/public demand for higher standards – enforce environmental regulations.
- Economic development has shift from manufacturing to services – service sector less energy dependent.
- Growth of efficient transport systems – developed economies invest in public transport/EV infrastructure.
- Economic development improves the standard of education/environmental awareness – leads to behavioural change such as reduction of meat consumption/energy conservation measures/use of public transport.

3. Global resource consumption and security

(a) Describe the distribution of areas of food emergency in Ethiopia. **[2]**

*Award **[1]** for each valid statement, up to a maximum of **[2]**.*

Possibilities include:

- band across the south of the country
- smaller area in north
- two clusters

(b) Explain how **two** different factors may reduce the food security of a country. **[2+2]**

*In each case, award **[1]** for a relevant factor that **reduces** food security and **[1]** for explanation/exemplification of the reduction to food security*

For example: Climate change causes extreme weather **[1]** which damages crops and reduces yields **[1]**.

Other factors include:

- Conflict reduces production – disruption of agriculture/destruction of crops/loss of workforce/diversion of food.
- Trade policies and restrictions/tariffs – disrupt global markets and limit access to food.
- Natural disasters such as earthquakes etc., destroy agricultural land/crops/infrastructure.
- Population growth – put pressure on production.
- Unsustainable agricultural practices/land degradation – causes soil erosion/reduces amount of good land for agriculture.
- Price volatility – makes food unaffordable.
- Recession/economic shocks – leads to job loss which impacts ability to access food.
- Lack of investment in agriculture – hampers productivity.
- Poor infrastructure – hinders distribution of food.
- Limited access to modern farming techniques – decreases productivity.

(c) Explain how national energy security may be disrupted by **one** environmental issue **and one** geopolitical issue. **[2+2]**

*In each case, award **[1]** for a relevant issue and **[1]** for explanation/exemplification of the disruption to energy security**.***

Environmental
For example: Period of drought **[1]** may reduce HEP production and supply of electricity **[1]**.

Other possibilities include:

- Hurricanes/storms/heatwaves – damage infrastructure, disrupt production.
- Landslides/earthquakes/volcanoes – destroy power plants/infrastructure.
- Environmental protection legislation/reduction of pollution – close fossil fuel plants and give supply gaps.
- Sea level rise – damages coastal infrastructure and production.

Geopolitical
For example: War/conflict e.g. Ukraine **[1]** has disrupted the production/flow of imported oil and gas [from Russia], increases prices **[1]**.

Other possibilities include:

- Sanctions/international relations tensions – disrupts the supply.
- Embargoes – cuts off supplies of fuel.

- Supply reduction/over-reliance/dependence on other nations (OPEC) – supplies not in control of the nation.
- Chokepoints in distribution – subject to disruption/piracy.
- Cyber warfare – shut down power supplies.
- Cartels such as OPEC – influence global supply and prices/affordability of energy.

Section B

4. (a) Using information from the map:

(i) identify which Australian state lost the most population from interstate migration between 2016 and 2021; **[1]**

New South Wales

(ii) state the range of interstate migration between 2016 and 2021. **[1]**

-102,200 to 107,500
(Accept 209,700)

(b) Suggest **one** reason why the information about the reasons for migration may be inaccurate. **[2]**

*Award **[1]** for a valid suggestion associated with interstate migration and **[1]** for further development.*

Possibilities include:

- Sample size
- Distribution of sample – is it stratified.
- People could move for more than one reason / a variety of reasons./reasons outside these categories
- People don't necessarily tell the truth/fail to give information.

(c) To what extent does the evidence presented in the infographic support the view that the characteristics of population change in Australia are similar across all parts of the country? **[6]**

*Award **[1]** for each valid point supported by evidence taken from the infographic, up to a maximum of **[5]**.*

*Award a maximum of **[4]** if only one side of the argument is given.*

*Award the final **[1]** for an overall appraisal, which weighs up the infographic as a whole.*

Support

- The main movement of population is to the main cities
- All capital cities have increase in population – all above 50% change
- Reasons for movement are the same between 2006 and 2018
- Reasons for interstate migration are similar proportion between years – housing approx. 8%
- Fluctuating numbers of interstate migration over time in NSW, Queensland and Victoria

Non Support

- Components of change in capital cities is different – lowest 58.7% highest 200%
- Some states have positive numbers 2016-21 whilst others are negative – NSW has a loss, Tasmania gains
- Proportion of reasons for interstate migration different – employment has more in 2018
- Differences in rate of interstate migration over time – Queensland has decrease and increase
- Some states have all positive migration, some all negative and some a mixture of positive and negative
- Victoria and NSW have decreased numbers of migrants between 2002 - 22 whilst Queensland have increased

For example: This can be seen to be true as the cartoon shows that there is a movement to the main cities **[1]**. The reasons for migration have stayed the same between 2006 and 2018 **[1]** although lifestyle has become less important and family more important **[1]**. There has been a growth in all capital cities **[1]** although the range of growth is 222.8% **[1]**. Overall, it would seem that the evidence indicates that the characteristics of change are different **[1]**.

Section C

5. **"**The use of technology offers the best way for governments to respond to the challenges of climate change." To what extent do you agree with this statement? **[10]**

Marks should be allocated according to the mark bands.

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

Responses should show an understanding of what is meant by the use of technology. This may examine the use of technology to mitigate – reducing climate change which can involve reducing the flow of heat-trapping greenhouse gases into the atmosphere. Some candidates may refer to solar radiation management via **Albedo enhancement** [Increasing the reflectiveness of clouds or the land surface so that more of the Sun's heat is reflected back into space], **Stratospheric aerosols** [Introducing small, reflective particles into the upper atmosphere to reflect some sunlight before it reaches the surface of the Earth]. Others may examine the use of technology in the removal of greenhouse gases from the air using **Ambient Air Capture** [Building large machines that can remove carbon dioxide directly from ambient air and store it elsewhere]

- Some responses may refer to the use of technology to adapt to the adverse effects of climate change. Comment on the use climate technologies such as drought-resistant crops, early warning systems and sea walls to adapt to the impacts of climate.
- Responses may refer to geopolitical efforts used by governments to control the production of GHG. Discussion of how the COP summits and Protocols can address the challenges of climate change at an international level by regulation, target setting and technology transfer.
- Some candidates my examine the role of national and local government. The shift to renewable energy in national energy planning, designing urban spaces for climate change, encouraging resource management such as recycling at a local/community level.
- Some responses may look at the role of governments in carbon emission offsetting and carbon trading.
- When considering the extent of agreement candidates could adopt a variety of approaches. Some may review the relative importance of different elements of the role of government, other approaches may evaluate the role of different types of government [democratic and autocratic] or governments at different stages of development. Some answers may look at scale and examine the alternative approaches at different levels.

Good answers may be **well-structured** (AO4) and may additionally offer a **critical evaluation** (AO3) which focuses on the relative benefits of technology. Responses may address relevant key concepts in their discussion.

For 5–6 marks expect a weakly-evidenced outlining of some ways that governments can address climate change

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

- <u>either</u> a well-evidenced synthesis which links together several elements from the guide and addresses both sides of the statement
- <u>or</u> a critical conclusion (or ongoing evaluation) informed by geographical concepts and/or perspectives.

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

6. "The most effective way to manage resources sustainably is through the circular economy." To what extent do you agree with this statement? **[10]**

Marks should be allocated according to the mark bands.

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

- Responses should have an understanding of what is meant by the circular economy – A circular economy entails markets that give incentives to reusing products, rather than scrapping them and then extracting new resources. In such an economy, all forms of waste, such as clothes, scrap metal and obsolete electronics, are returned to the economy or used more efficiently. This can provide a way to not only protect the environment, but use natural resources more wisely, develop new sectors, create jobs and develop new capabilities. Candidates should develop the elements of circular economy to show how this manages resources in a sustainable fashion.
- Responses may also show an understanding of resource management through the classic theories of population and resources – these could develop the theories of Malthus, with management examined in a pessimistic view, or Boserup which is more optimistic. The links between population and resources for each one could be explained and examined in the context of sustainability.
- Responses may also show an understanding of resource management through the sustainable development goals. Answers may refer to specific SDGs such as responsible consumption and production, zero hunger and climate action and develop how following the goals can lead to resource sustainability. This can be addressed at a variety of levels from local to global.
- When considering the extent of agreement candidates could adopt a variety of approaches. Some may review the relative importance of different elements of the circular economy, other approaches may evaluate the circular economy against other methods such as population control or expansion of resources. Some answers may look at scale and examine the alternative approaches at different levels.

Good answers may be **well-structured** (AO4) and may additionally offer a **critical evaluation** (AO3) which focuses on the relative approaches to sustainable management of resources. Responses may address relevant key concepts in their discussion.

For 5–6 marks

Expect a weakly-evidenced outlining of the management of resources sustainably through the circular economy in one or more contexts

For 7–8 marks

Expect a well-structured account, which includes:

- either a well-evidenced synthesis which links together several themes from the guide and addresses both sides of the statement
- or a critical conclusion (or ongoing evaluation) informed by geographical concepts and/or perspectives.

For 9–10 marks

Expect both traits.