Markscheme

May 2023

Geography

Higher and standard level

Paper 2

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. • 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).

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) Identify the age group with the highest number of people. **[1]**

   65-69

   (ii) Estimate the total population, in millions, aged 0–14. **[1]**

   16 (million) *Accept 14-18.*

   (b) Explain **two** ways of managing the economic problems associated with an
   ageing society. **[2+2]**

   Award [1] for identifying a valid way and [1] for further development/exemplification that explains how it addresses the economic problem.

   For example: Raising pension age **[1]** so individuals are paid pensions for a
   shorter period of time **[1]**.

   Other management strategies include:
   - Encouraging immigration to increase workforce/maintain tax revenues.
   - Increasing taxation to pay for pensions.
   - Increased use of technology e.g. in care homes
   - Changing pension system e.g. introduction of private pensions to decrease the burden on the state, phased retirement to encourage older workers to stay in employment
   - Encourage volunteer care work to reduce expenditure on the elderly.
   - Improve health of elderly to reduce money spent on hospitals.
   - Improve workplace attitudes to the elderly/workplace design – encourages elderly to stay in employment and require less money spent on them/keep contributing.
   - Support lifelong learning – boosts employability of ageing society/keeps minds active.
   - Pro-natal policies – increases working age group to increase tax revenue.

(c)   Explain how **two** physical factors can lead to uneven population distribution in **one** place you have studied.   **[2+2]**

The geography guide refers to population distribution at a national scale so expect many candidates to refer to this scale but accept other valid scales that illustrate one place – e.g. regional

Award [1] for a physical factor and [1] for further development/exemplification that explains how the factor leads to uneven distribution.

Candidates may refer to uneven via concentration or sparsity. Physical factors must refer to **one** place for full marks. Only credit factors that relate to the same place for both physical factors. If no identified place award **[1]** for valid factor plus development up to a maximum of **[2].**

For example: Population will be concentrated in areas close to rivers in New South Wales **[1]** where there is abundant water supplies for agriculture/domestic consumption **[1]**.

Other possible physical factors include:
- Climate – population sparse in areas of arid climate in Australia/lack of water supply
- Relief – population concentrated in lowland areas such as North China Plain/easier to farm.
- Altitude – population sparse at high altitude in Chile/difficult to breath
- Proximity to bays/estuaries/coast – high population densities along Norwegian coast/access to fishing and transport
- Fertile soils – higher concentrations in the Nile valley in Egypt/allow agriculture.
- Distance – isolated areas in northern Canada/away from areas of economic development
- Resources e.g. coal/mineral deposits – high concentrations in South Wales valleys/coal mining attracted people for jobs
- Floodplains of the Severn Valley that suffer from frequent natural disasters [e.g. flooding] have lower density/as housing is in danger
- Areas that suffer from disease induced by physical factors [e.g. coastal areas of Papua New Guinea] have lower densities/people suffer from malaria
- Landlocked areas have lower population/difficulty of trade.
- Dense vegetation in the Amazon Basin area of Brazil has sparse population/provide issues of accessibility.

2. Global climate – vulnerability and resilience

(a) Outline what is meant by global dimming. **[2]**

Reduction in the amount of solar energy/sunlight (reaching the Earth's surface) **[1 reserved]**, because volcanic activity has put dust in the atmosphere **[1]** /air pollution (sulphate aerosols) from industrialization **[1]** leading to a decrease in global temperatures **[1]**.

(b) Suggest **two** ways in which economic development leads to international variations in greenhouse gas emissions. **[2+2]**

Award [1] for identification of a valid way and [1] for the effect leading to international variation in GHG emissions.

Candidates may refer to international variation via comment on levels of development (richer/poorer/HIC/MIC/LIC etc.)

For example: Higher level of economic development means more people can afford cars **[1]** therefore GHG emissions are higher in HICs **[1]**.

Other possibilities include:
- More domestic appliances are used in HICs/results in greater use of electricity which gives more GHG.
- Changed diet of middle classes in countries with a growing economy/result in more meat and methane emissions
- More manufacturing industry in HICs/results in higher emissions of GHG
- More alternative energy use in HICs/decreases use of fossil fuels
- Increased awareness/education in HICs/people use less fossil fuel/recycle.
- Government initiatives in HICs/encourage use of alternative energy.
- Move from manufacturing to service industry in HICs/means move to less carbon-based industry.
- Shift to sustainable growth in richer countries/more responsible consumption thus less energy – recognition of embedded energy.
- Economic shocks (e.g. COVID, 2008 financial crash and conflict)/reduce economic activity in countries with developed economies.

(c)   Explain **two** reasons why wealthy people are less vulnerable to climate change.   **[2+2]**

In each case, allow [1] for a valid reason and [1] for further development/exemplification to explain why wealthy are less vulnerable.

For example: Wealthy people can afford to live in areas which have better sea defences **[1]** so they are less vulnerable to sea level rise **[1]**.

Other possibilities include:
- Houses of wealthy are built of sturdier materials/can withstand impacts of climate change induced flooding.
- Can afford food or purchase food from elsewhere/can mitigate decrease in food supplies.
- richer farmers can use irrigation/mitigate against the effects of drought.
- have the education/skills/funds making migration possible/possible to move to areas where climate change less susceptible to the impacts.
- can afford medicines to combat disease/reduce the impacts climate change induced medical issues e.g. malaria.
- Wealthy people can afford insurance/reduces the level of loss of the individual.
- Wealthy people have access to political power/can skew policies in favour of their protection.
- Wealthy people are employed in jobs less affected by climate change/fewer are engaged in farming which is more vulnerable.
- Wealthy people have access to education/provides awareness of the impacts of climate change which can then be avoided/mitigated.

3. **Global resource consumption and security**

(a) (i) Estimate the oil consumption of Japan, in million oil-equivalent tonnes, in 2016. **[1]**

Allow 150 to 200

(ii) Identify **one** country that consumes more oil than it produces. **[1]**

United States / India / China / Australia / Malaysia / UK

(b) Explain **one** reason why oil consumption per person over the last 20 years has:

(i) decreased in some high-income countries **[2]**

Award [1] for a valid reason and [1] for further development/exemplification to explain decrease.

For example: Germany has adopted renewable sources of energy such as large scale solar/wind/biomass power **[1]** due to a desire to cut carbon emissions **[1]**.

Other possibilities include:
• awareness of environmental impact/people reduce use of transport by cars or use bikes
• relative economic cost/means that people cannot afford to use oil
• depletion of local reserves/access to oil is reduced
• advancement of technology/efficiency of machinery has increased
• global shift of industry/manufacturing has reduced in HICs
• changes in transport e.g. electric vehicles/require less fossil fuel

(ii) increased in some middle-income countries. **[2]**

Award [1] for a valid reason and [1] for further development/exemplification to explain increase.

For example: Growth of wealth of the middle class **[1]** leads to increased use of/demand for cars **[1]**.

Other possibilities include:
• industrialization of economy/increased use of machinery which requires power/fuel.
• increased living standards/people use more devices that require electricity or fossil fuels.
• urbanization/people in urban areas have greater access to transport

(c)　Explain **one** environmental impact **and one** economic impact of international flows of waste on receiving countries.　　　　　　**[2+2]**

*Award **[1]** for the impact and **[1]** for development/exemplification that explains impact on receiving countries.*

Candidates may discuss a variety of types of waste including e-waste, and other types of consumer waste such as plastics and paper.

Environmental impact

For example: Water may become polluted **[1]** by heavy metals from dump sites **[1]**

Other possibilities environmental impacts include:
- Air pollution from gases escaping from waste tips/methane from decomposition or toxic gases from burning.
- Soil pollution by leachates from waste/changing pH and heavy metal contamination.
- Ocean pollution from plastics and other elements of waste/waste dumps eroded by rivers or wind.
- Loss of biodiversity/dump sites destroy local ecosystems or water pollution kills wildlife in streams.

Economic impact

For example: Jobs are created **[1]** extracting precious metals from electronic components **[1]**

Other possible economic impacts include:
- Market for reused goods/e.g. clothes recovered from waste.
- Source of raw materials/new goods can be made from recovered material.
- Fuel for electricity generation/provides power for people and industry.
- Foreign exchange/countries are paid to import waste.
- Costs of cleaning up/removal of wastes or medical costs of treatment.

Section B

4.   (a)   (i)   Identify the extreme weather event in the Americas with the highest
economic cost in 2019.   **[1]**

        Wildfires/droughts/extreme temperatures

    (a)   (ii)   Identify the modal value, in billions, for the cost of floods in 2019.   **[1]**

        $2.5 (billion).

    (b)   Suggest **one** reason for the trend in weather-related disasters between
1980 and 2019.   **[2]**

*Award **[1]** for stating a valid reason for the increase that specifies a **consequence** of climate
change (e.g. increased temperatures/humidity) and **[1]** for valid development relating to
increased number of disasters per year.*

For example: Increasing due to global warming **[1]** due to rising temperatures causing more
cyclones **[1]**.

Other possibilities include**:**

- Increased water vapour in atmosphere **[1]** resulting energy increases the number of
intense storms **[1]**
- Increased sea level **[1]** increased incidence of flooding in low lying areas **[1]**
- Increased frequency of El Niño **[1]** more hurricanes in Pacific/more droughts in
Australia **[1]**.

(c)   To what extent does the evidence in the infographic support the view that the
       impacts of climate change are uniform?   **[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 points made in the answer
       relating to the infographic as a whole.*

       Supporting:

       - Storms occur on all continents.
       - Floods occur in most areas.
       - Climate threatens health of all settlements.
       - Weather events produce similar diseases.
       - Affects people of all ages/cultures

       Against:

       - Reference to differences in population displaced by different extreme weather events
       - Reference to differences in damage between extreme weather events
       - Reference to differences in damage between world regions
       - Reference to differences in the changes of number of climate related disasters over time
         e.g. fluctuating.

       Do not credit simple quoting of data from the resource – it needs to be given a context.

       For example: The information on the infographic supports the view as it shows that climate
       change effects all types of settlement **[1].** It also shows that cyclones, typhoons and
       hurricanes have an economic impact across all the regions shown **[1]** However their overall
       cost is more than the other extreme weather events **[1]** at $55.2 million whilst floods only
       cost $43.6 million and wildfires etc costs $25 million **[1 for contextual use of data]**. There is
       also a difference in the number of internally displaced population caused by different events
       with floods and cyclones etc displacing the most people **[1].** In my opinion the impacts of
       climate change are far from uniform and are instead unbalanced **[1].**

Section C

5. "The policies used to manage natural population change are more successful than those used to manage climate change." To what extent do you agree with this statement? **[10]**

Marks should be allocated according to the markbands on pages 3 to 4.

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

- Responses should show knowledge and understanding of the reasons that population change needs to be managed and could refer to ageing societies, issues of population growth, issues of population decline, rapid growth of urban populations due to youthful populations etc. Answers should show knowledge and understanding of policies used to address issues of population change that could include control of birth rates (increase or decrease), government and societal policies used to address issues of an ageing population etc. Some answers may refer to policies that exploit the advantages of the demographic dividend.
- Responses should show knowledge and understanding of the effects of climate change that need to be managed and could refer to sea level change, extreme weather, changes to agriculture, health issues, migration and changing ocean transport routes. Answers should show knowledge and understanding of policies used to issues of climate change which could refer to government led strategies such as geopolitical treaties, carbon offset and trading, geo-engineering. Some answers may refer to corporate and individual strategies such as reduction of carbon footprints.
- Responses should show knowledge and understanding of the operation and level of success of the policies discussed.

Good answers may be **well-structured** (AO4) and may additionally offer a **critical evaluation** (AO3) which focuses on the relative success of the policies selected with reference to population change and climate change and may refer to the difficulty of controlling natural systems. Responses may focus on a comparison between policies used for population and climate change or may compare the success of policies within climate change and population change. Some comments may refer to the relative success introducing ideas of community risk and vulnerability. Other critical evaluation may refer to spatial variations in success such as a comparison of nations/regions and spatial variation in exposure to population and climate change. Some answers may comment on temporal variations of success.

For 5–6 marks, expect a weakly-evidenced outlining of some of the policies (and their success) used to manage population and/or climate change.

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 acknowledges both sides of the argument
- or a critical conclusion (or ongoing evaluation) informed by geographical concepts and/or perspectives.

For 9–10 marks, expect both traits.

6. "The most important factor influencing the water–food–energy nexus is climate change."
To what extent do you agree with this statement?

Marks should be allocated according to the markbands on pages 3 to 4.

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

- Responses should show knowledge and understanding of the WFE nexus – nexus refers to connections and so candidates should display an understanding of the interactions between two or more elements whether they are dependent or interdependent. The WFE nexus therefore studies the connections between these three resource sectors whether they are harmonious or conflicting. Responses may outline how changes in one element of the nexus has an influence on one or both of the other elements.
- The geography guide gives some emphasis to the idea of resource security so responses may develop interactions in the form of impacts on resource security. Answers may give some development of these securities – water security is access to safe drinking water and sanitation, energy security is access to clean, reliable and affordable energy and food security is access to sufficient, safe and nutritious food. Some candidates may discuss this in the context of sustainability.
- Responses should show a knowledge and understanding of the impacts of climate change on the WFE nexus. For instance, climate change may affect water availability and thus crop yields, increased drought may impact on water availability and thus the production of hydroelectricity. Some answers may address the idea that the influence is both ways and that elements of the nexus may impact on climate change – e.g. a green economy approach to resources may be used to manage climate change.
- Responses should show that other factors have an influence on the WFE nexus. Answers may address the links between population change and the nexus, technology and the nexus, changing diets and the nexus, changing economies and the nexus, environmental movements and the nexus, etc.

Good answers may be well-structured (AO4) and may additionally offer a critical evaluation (AO3) which focuses on the relative importance of climate change on the WFE nexus. Some answers may address the idea that climate change has varying importance on different elements of the nexus. Responses may focus on a spatial approach and give an evaluation of the importance of climate change on the nexus in different regions/countries.

For 5–6 marks, expect a weakly-evidenced outlining of some links between climate change/other factors and the WFE nexus

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 acknowledges different elements of the dialogue
- or a critical conclusion (or ongoing evaluation) informed by geographical concepts and/or perspectives.

For 9–10 marks, expect both traits.