



# 19<sup>th</sup> International Geography Olympiad

Bandung, Indonesia

8–14 August 2023

## WRITTEN RESPONSE TEST

### Question and Answer Booklet

Name: ..... Team: .....

Student number

1	9				
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**Do NOT open the Booklet before instructed to do so by a supervisor.**

## Instructions for Students

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1. Fill in your name, team and iGeo student number on the front page of this Question and Answer Booklet.
2. Fill in your iGeo student number in the boxes on top of the pages in this Booklet.
3. This test consists of 6 sections.
4. The maximum total mark is 90.  
The mark for each question is given in the margin at the beginning of the question.  
There is a maximum of 15 marks for each section.
5. Answer all questions in the spaces provided in this Booklet in English.  
Keep the left margin free for markers.  
Please write clearly.  
Please use blue (or black) pen, not pencil.
6. Check the backs of pages as questions are printed on both sides of a page.
7. There are blank pages which you can use as additional space for your notes.  
Please cross through any notes so that we know they are not part of your answers.  
If you use these pages for answers, please label them clearly with the Section and question number (e.g. A1).
8. Where appropriate, please write sentences or phrases not single words.
9. Give only the required number of answers (reasons, examples, etc.).  
For instance, if the question asks for 2 reasons and you give more than 2, only the first 2 reasons will be marked.
10. The Resource Booklet contains Figures referred to in this Booklet.  
Do not write any of your answers in the Resource Booklet.
11. You may use a calculator during the test.
12. Students not educated in English are allowed to use bilingual dictionaries during the test.  
Students must ensure that their bilingual dictionaries do not contain unauthorized material such as study notes and named examples of places etc.
13. Time:  
180 minutes for students not educated in English (+10 minutes reading time),  
150 minutes for students educated in English (+10 minutes reading time).

**Good luck!**

### **Written Response Test**

Contributions from: Australia, Belarus, Croatia, Denmark, Indonesia, Poland, Romania and Thailand  
Committee Convenor: Ivan Sulc (Croatia)  
Director of Tests: Susan Lomas (UK)

## Section A: The Aral Sea

Resource Booklet Box A1 provides historical information regarding the Aral Sea region. Resource Booklet Figure A1 shows Central Asia with the location of the Aral Sea. Resource Booklet Figure A2 contains Landsat satellite imagery showing changes of the Aral Sea (1964-2022). Resource Booklet Figure A3 shows changes in Precipitation of the Aral Sea 1955-2015. Resource Booklet Figure A4 shows changes in Salinity of the Aral Sea 1955-2015.

2 m

1. Describe the drainage pattern surrounding the Aral Sea and name any appropriate technical term(s) that apply to this sort of basin.

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3 m

2. Study Resource Booklet Box A1 and Figures A1 and A2. Using the information provided and your geographical understanding, explain three **economic impacts** due to the changing conditions of the Aral Sea.

Impact 1: .....

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Impact 2: .....

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Impact 3: .....

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2 m

3. Study Resource Booklet Figure A3.

Identify two factors responsible for the trend shown in this precipitation graph of the Aral Sea.

Factor 1: .....

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Factor 2: .....

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4 m

4. Study Resource Booklet Figure A4.

Explain two **causes** and two **environmental effects** of the trend shown in the salinity graph of the Aral Sea.

Cause 1: .....

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Cause 2: .....

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Effect 1: .....

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Effect 2: .....

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4 m

5. Study Resource Booklet Box A1 and Resource Booklet Figures A1, A2, A3 and A4.

Explain 4 reasons why solutions for the issues in the Aral Sea region are difficult to implement.

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## Section B: Maritime transport

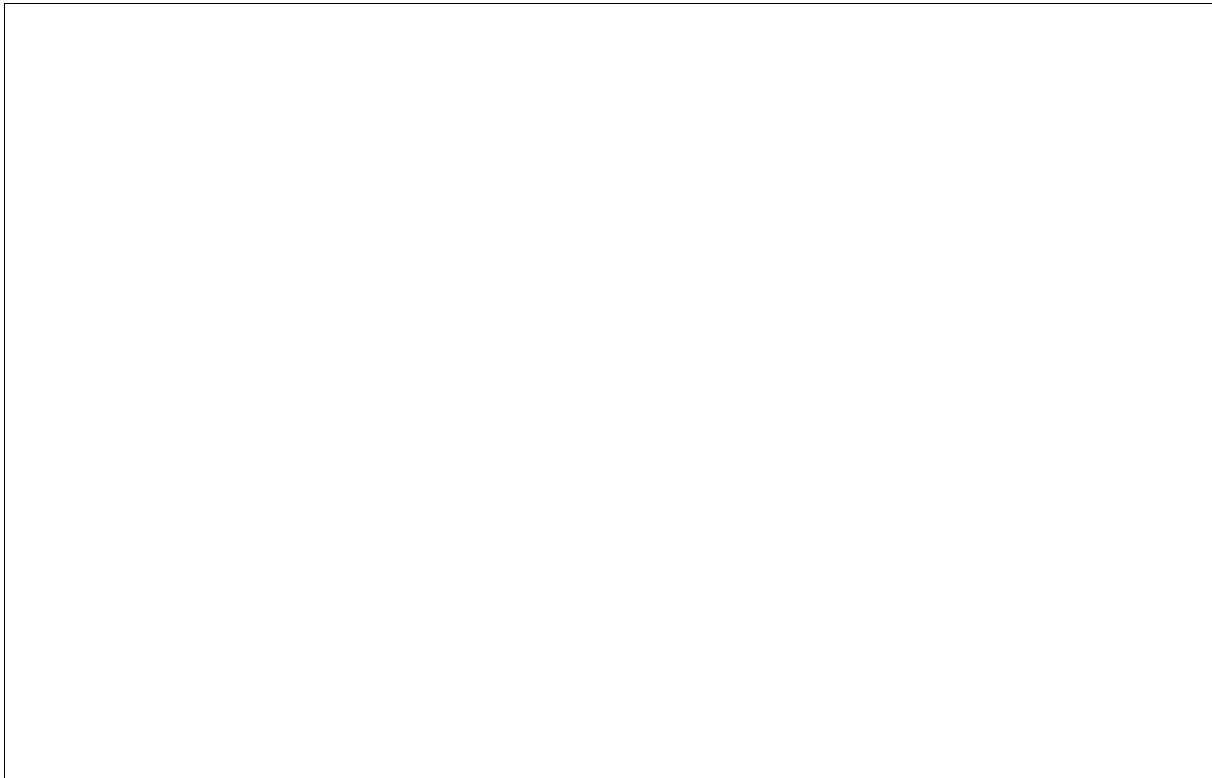
Resource Booklet Table B1 shows the UNCTAD port liner shipping connectivity index (PLSCI) in the first quarter (Q1) of 2006 and fourth quarter (Q4) of 2022 in 50 busiest container ports in the world.

Resource Booklet Figure B1 shows Maritime trade by basic type of cargo by world regions 2006-2021.

Resource Booklet Figure B2 shows the Finnafjord Port Project in Iceland.

5 m

1. Study Resource Booklet Table B1. Use an appropriate data representation method to show the Port Liner Shipping Connectivity Index (PLSCI) in 2006 (Q1) and 2022 (Q4) for the **ten highest ranked container ports in 2022**.



2 m

2. Study the Resource Booklet Table B1 and Figure B1 and your diagram in Question B1. Identify two spatial and/or time-related patterns of international **tanker freight trade** and explain them.

Pattern 1: .....

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Pattern 2: .....

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2 m

3. Study Resource Booklet Figure B2.

Using the information provided and your geographical understanding suggest two main reasons for the location of this port in a sparsely populated area outside the major sea transit routes.

Reason 1: .....

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Reason 2: .....

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2 m

4. The investment in the Finna fjord Port Project would not have been possible a few decades ago. Specify **two changes** in global economic or environmental conditions that make the investment possible now.

Change 1: .....

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Change 2: .....

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4 m

5. Outline the **environmental impacts** of the Finna fjord Port Project. Use at least two positive and two negative environmental impacts.

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## Section C: Land use and land cover change in Burkina Faso

Resource Booklet Figure C1 shows land cover change in Burkina Faso in 1975, 2000 and 2013.

2 m

1. Study Resource Booklet Figure C1.

The northern part of Burkina Faso lies in a large region that stretches across Africa from east to west.

a) Name this region.

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b) Identify the main **natural characteristic** of this region that explains the type of land cover in northern Burkina Faso.

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6 m

2. Study Resource Booklet Figure C1.

Describe in detail **three changing patterns** in land cover in Burkina Faso between 1975 and 2013.

Pattern 1: .....

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Pattern 2: .....

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Pattern 3: .....

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1 m

3. Specify the main **reason** for the land cover change in Burkina Faso.

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3 m

4. Outline three **implications** of the land cover change for the ecosystems in Burkina Faso.

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3 m

5. In 2020, more than 50% of Burkina Faso's population suffered from chronic food deficiency. Suggest and explain three **sustainable development projects** that would help reduce food insecurity.

Project 1: .....

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Project 2: .....

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Project 3: .....

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## Section D: Innovative and sustainable cities

Innovative and sustainable cities refer to urban areas that incorporate innovative solutions and sustainable practices to enhance the overall quality of life for residents while minimising environmental impact. These cities prioritise the efficient use of resources, integration of technology, and the promotion of social, economic, and environmental well-being.

To achieve innovative and sustainable urban cities, key strategies include sustainable urban transportation and water-sensitive urban design. Sustainable transportation in cities focuses on public transportation networks, active transportation, electric vehicles, and integrated land use planning. Water-sensitive urban design involves incorporating green infrastructure, reusing water, creating wetlands, and mitigating the urban heat island effect.

Resource Booklet Figure D1 shows the number of battery and plug-in hybrid electric vehicles in the world 2012-2021.

Resource Booklet Figure D2 shows a model of design of a water-sensitive urban city.

2 m

1. Study Resource Booklet Figure D1.  
Describe **two changes** in the number and structure of electric vehicles in the transport in the world between 2012 and 2021 using **specific evidence**.

Change 1: .....

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Change 2: .....

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2 m

2. Study Resource Booklet Figure D1.  
Suggest **two reasons** for changes in the use of electric vehicles in transport between 2012 and 2021.

Reason 1: .....

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Reason 2: .....

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4 m

3. Discuss the **benefits** and **limitations** of electric vehicle deployment. Your answer should include at least two benefits and two limitations.

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3 m

4. Study Resource Booklet Figure D2.  
Explain three **ways** in which the management of the flow of water influences the viability of a city.

Way 1:.....

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Way 2:.....

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Way 3:.....

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for answers, which are clearly labelled with the Section and question number).



3 m

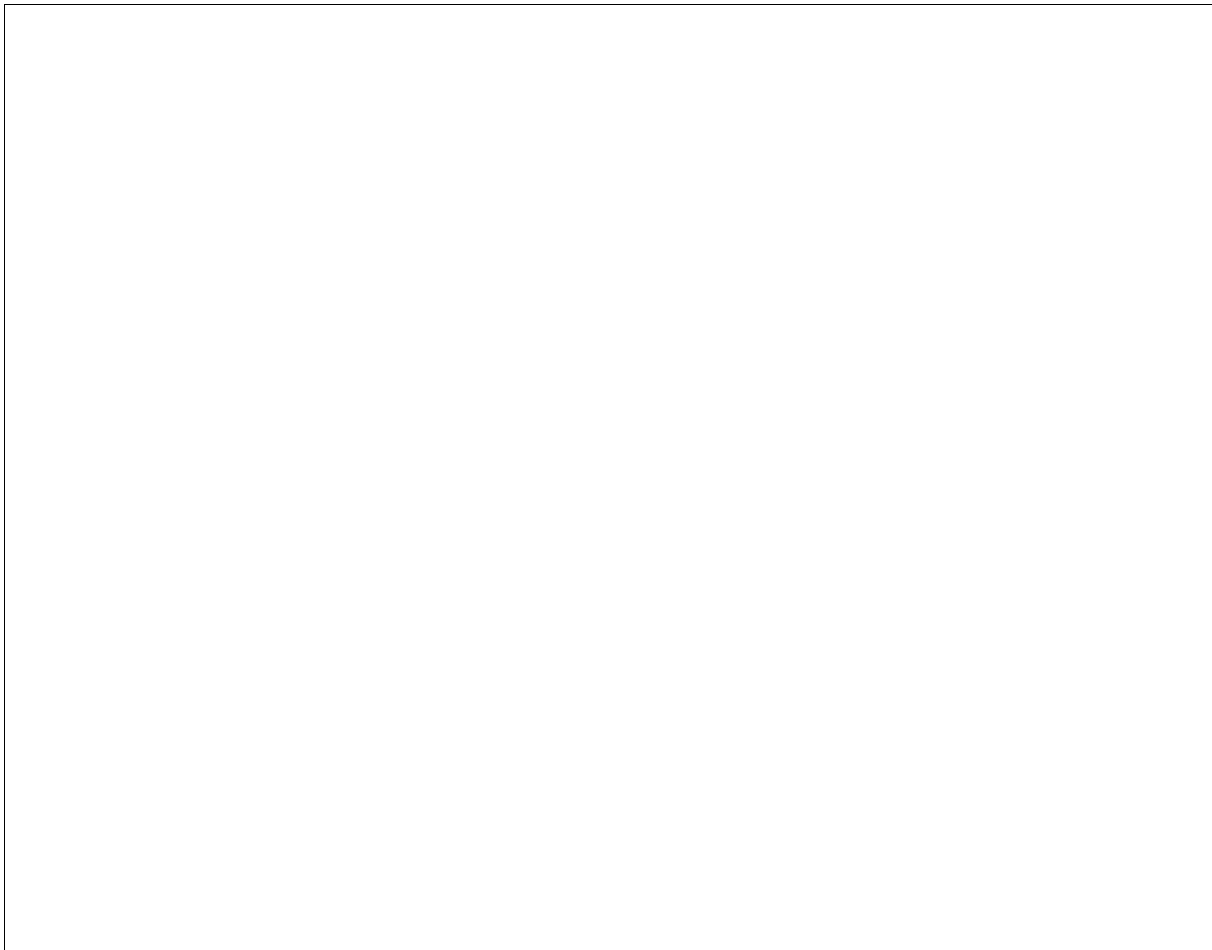
3. Study Resource Booklet Figure E1.

Geologists, engineers, and planners often need to know the rate at which the shoreline moves. This helps them to better define appropriate uses of coastal areas. Use the historical imagery provided to answer the questions 3a and 3b. The scale is the same for both images.

a) Is the beach at point '300 m' eroding or accreting over time?

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b) Estimate the **rate of change** of the shoreline at the point '300 m' to justify your response in part a). Your answer should include the full calculation. The rate must be expressed in metres per month.



1 m

4. Study Resource Booklet Figure E3.

Name the **coastal feature** identified as 'X'.

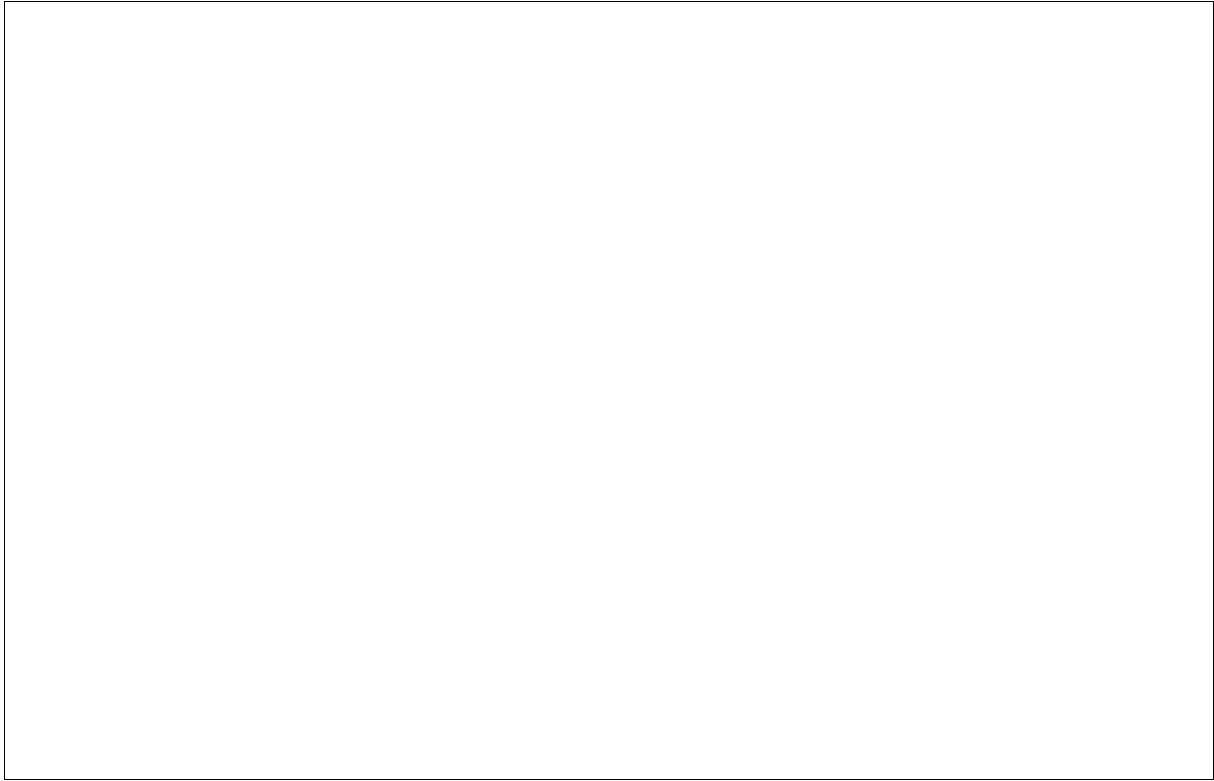
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6 m

5. Study Resource Booklet Figure E3.

Use the information provided and your geographical understanding to answer the questions 5a and 5b.

a) Draw a **sketch** of the geomorphological processes that formed the coastal feature "X".



b) Explain the geomorphological process of the formation of the coastal feature "X" shown in the sketch.

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## Section F: Ski tourism

Resource Booklet Figure F1 shows mountain ranges in the world with developed ski tourism.

Resource Booklet Figure F2 shows average annual skier visits 2010-2014 (in million).

Resource Booklet Figure F3 shows influence of innovation in transport on mountain tourism growth.

Resource Booklet Figure F4 shows examples of spatial transformation associated with ski tourism.

4 m

1. Study Resource Booklet Figures F1 and F2.

There are many spectacular mountain ranges in the world, but only a few have developed mass ski tourism. Outline and give reasons for 4 social and/or infrastructural **conditions** that have led to the development of mass ski tourism in the mountains.

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2 m

2. Study Resource Booklet Figures F1 and F2.

Name two main **areas** where ski tourism has developed (use the names of the regions from Figure F1 or similar, not the names of continents or countries). Justify your answer with **statistical data** available in the Resource Booklet.

Area 1: .....

Area 2: .....

3 m

3. Study Resource Booklet Figure F3.

Ski tourism in the world has stagnated since the 1980s. Discuss changes in **tourists' travel behaviour** that could be responsible for this stagnation. Your answer should include at least three arguments.

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4. Study Resource Booklet Figure F4a.

Name the **phenomenon** that can be seen in the photograph. Explain how ski tourism can increase the **hazard** of this phenomenon.

Name of the phenomenon:.....

Explanation: .....

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3 m

5. Study Resource Booklet Figure F4.

Using the information provided and your geographical understanding explain three **negative environmental impacts** of ski tourism in the mountains.

Impact 1: .....

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Impact 2: .....

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Impact 3: .....

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(you can use it for your notes (please cross them through afterwards) or  
for answers, which are clearly labelled with the Section and question number).

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