Diploma Programme
Programme du diplôme
Programa del Diploma

# Geography
# Standard level
# Paper 1

4 May 2023

**Zone A** morning | **Zone B** afternoon | **Zone C** morning

1 hour 30 minutes

## Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer the questions in two options.
- The accompanying **geography resource booklet** is required for this examination paper.
- The maximum mark for this examination paper is **[40 marks]**.

| Option | Questions |
|---|---|
| Option A — Freshwater | 1 – 2 |
| Option B — Oceans and coastal margins | 3 – 4 |
| Option C — Extreme environments | 5 – 6 |
| Option D — Geophysical hazards | 7 – 8 |
| Option E — Leisure, tourism and sport | 9 – 10 |
| Option F — Food and health | 11 – 12 |
| Option G — Urban environments | 13 – 14 |



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Answer the questions in **two** options.

When relevant, answers should refer to case studies or examples, and where appropriate include well-drawn maps or diagrams.

**Option A — Freshwater**

Answer the following question.

**1.** Refer to the map on page 2 of the accompanying resource booklet.

The map shows the major wetland areas within the Murray–Darling river basin in the state of New South Wales in Australia.

(a) (i) State the direction of flow of the Darling River. [1]

(ii) Estimate the length of the wetland area, in kilometres, between **A** and **B**. [1]

(b) Outline **one** benefit of maintaining a wetland area. [2]

(c) Explain **one** pressure on wetlands from agriculture **and one** pressure on wetlands from altered water flow. [3 + 3]

Answer either part (a) or part (b).

**Either**

**2.** (a) Examine the view that it is increasingly difficult to predict river flooding. [10]

**Or**

**2.** (b) Examine why water management issues might be a cause of conflict between stakeholders. [10]

## End of Option A

**Option B — Oceans and coastal margins**

Answer the following question.

**3.** Refer to the photograph on page 3 of the accompanying resource booklet.

The photograph shows the landscape at Cape Foulwind, South Island, New Zealand.

(a) Using the photograph, identify **two** different coastal landforms formed by marine erosion. [1 + 1]

(b) Outline **one** subaerial process that contributes to the erosion of coastal landforms. [2]

(c) Explain how changes in sea level contribute to the formation of:

(i) a raised beach; [3]

(ii) a fjord. [3]

Answer either part (a) or part (b).

**Either**

**4.** (a) Examine how the increasing demand for abiotic resources in ocean areas may be a source of international conflict. [10]

**Or**

**4.** (b) Examine why it is difficult to reduce the impacts of hurricanes on coastal places and people. [10]

## End of Option B

**Option C — Extreme environments**

Answer the following question.

**5.** The table shows the vulnerability to desertification of selected countries in Asia.

| Country | Total land area ($km^2$) | Vulnerability to desertification | | |
|---|---|---|---|---|
| | | Flat area ($km^2$) | Hilly area ($km^2$) | Mountainous area ($km^2$) |
| China | 9 326 410 | 262 410 | 65 638 | 72 214 |
| India | 2 973 190 | 1 277 328 | 206 317 | 165 912 |
| Indonesia | 1 826 440 | 29 596 | 5289 | 232 |
| Pakistan | 778 720 | 31 472 | 17 032 | 181 503 |
| Myanmar | 657 740 | 130 903 | 20 630 | 13 477 |
| Thailand | 511 770 | 90 241 | 7265 | 0 |
| Philippines | 298 170 | 25 962 | 3855 | 0 |
| Laos | 230 800 | 48 963 | 0 | 0 |
| Nepal | 136 800 | 20 131 | 0 | 228 |
| Bhutan | 47 000 | 1407 | 0 | 0 |

[Source; Hossain, A. et al., Agricultural Land Degradation: Processes and Problems Undermining Future Food Security, In: Fahad, S., et al. *Environment, Climate, Plant and Vegetation Growth*, pp. 17–61, 2020, Springer Nature. https://link.springer.com/chapter/10.1007/978-3-030-49732-3_2.]

(a) (i) Identify the country that has the most mountainous area vulnerable to desertification. [1]

(ii) Estimate the percentage of land area in the Philippines vulnerable to desertification. [1]

(b) Outline **one** way in which technology can increase access to water in arid environments. [2]

(c) Explain how the process of desertification can be increased by:

(i) overgrazing; [3]

(ii) conflict. [3]

**(Option C continues on the following page)**

**(Option C continued)**

Answer either part (a) or part (b).

**Either**

**6.** (a) Examine the importance of glacial erosion in creating unique landscapes in glaciated upland areas. [10]

**Or**

**6.** (b) Examine how competition for resources in **one or more** extreme environments has led to conflict between different stakeholders. [10]

## End of Option C

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**Option D — Geophysical hazards**

Answer the following question.

**7.** Refer to the map on page 4 of the accompanying resource booklet.

The map shows the thickness of the lava flows on the lower slopes from Kīlauea, a shield volcano, following its eruption in 2018.

(a) (i) State the lava thickness that covers the largest area. [1]

(ii) State the line of longitude nearest to the lava flow. [1]

(b) Outline **one** reason why the lava from a shield volcano spreads over a wide area. [2]

(c) Explain how **two** different communications technologies can help with the post-event management of geophysical hazards. [3 + 3]

Answer either part (a) or part (b).

**Either**

**8.** (a) Examine the importance of physical **and** human factors in increasing mass movement events. [10]

**Or**

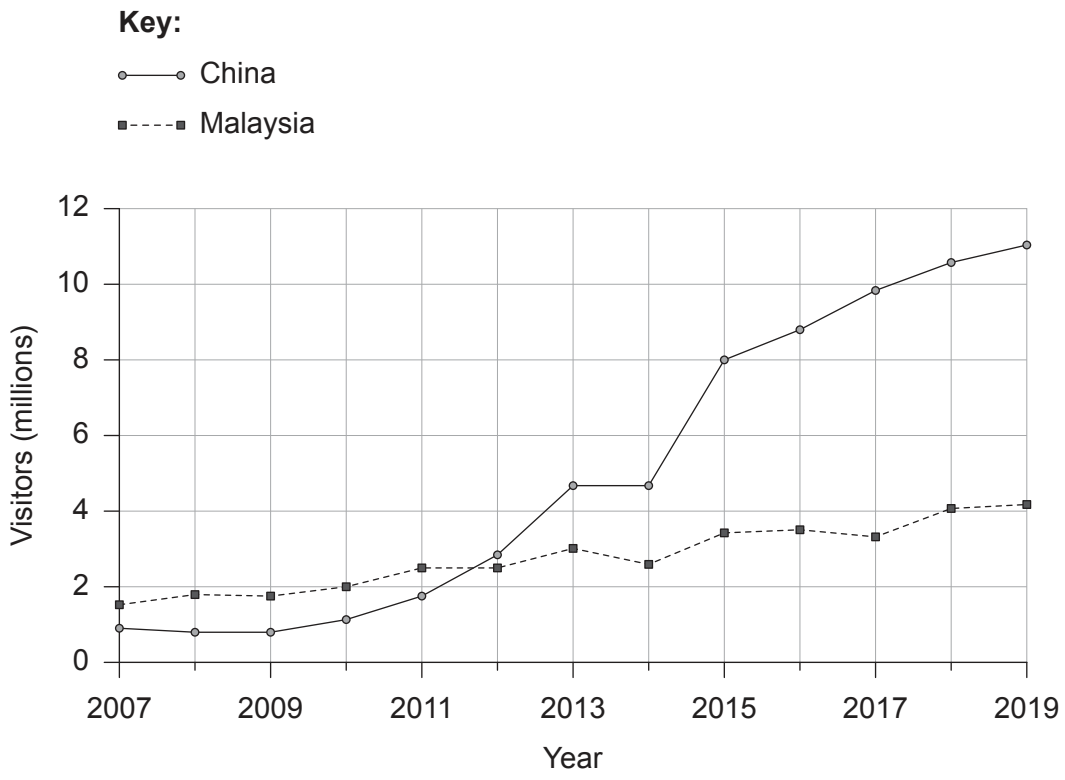
**8.** (b) Examine how economic **and** social factors may reduce the vulnerability of communities to geophysical hazard risk. [10]

## End of Option D

**Option E — Leisure, tourism and sport**

Answer the following question.

**9.** The graph shows visitor arrivals to Thailand from China and Malaysia between 2007 and 2019.




(a) (i) State the increase in visitors from Malaysia, in millions, between 2010 and 2018. [1]

(ii) State the years between which the number of visitors from China increased the most. [1]

(b) Outline **one** reason why the growth of diaspora can encourage tourists to a region. [2]

(c) Explain the effects over time on visitor numbers caused by:

(i) social media; [3]

(ii) carrying capacity being exceeded. [3]

**(Option E continues on the following page)**

**(Option E continued)**

Answer either part (a) or part (b).

**Either**

**10.** (a) Examine the long-term benefits **and** costs to a country hosting an international sporting event. [10]

**Or**

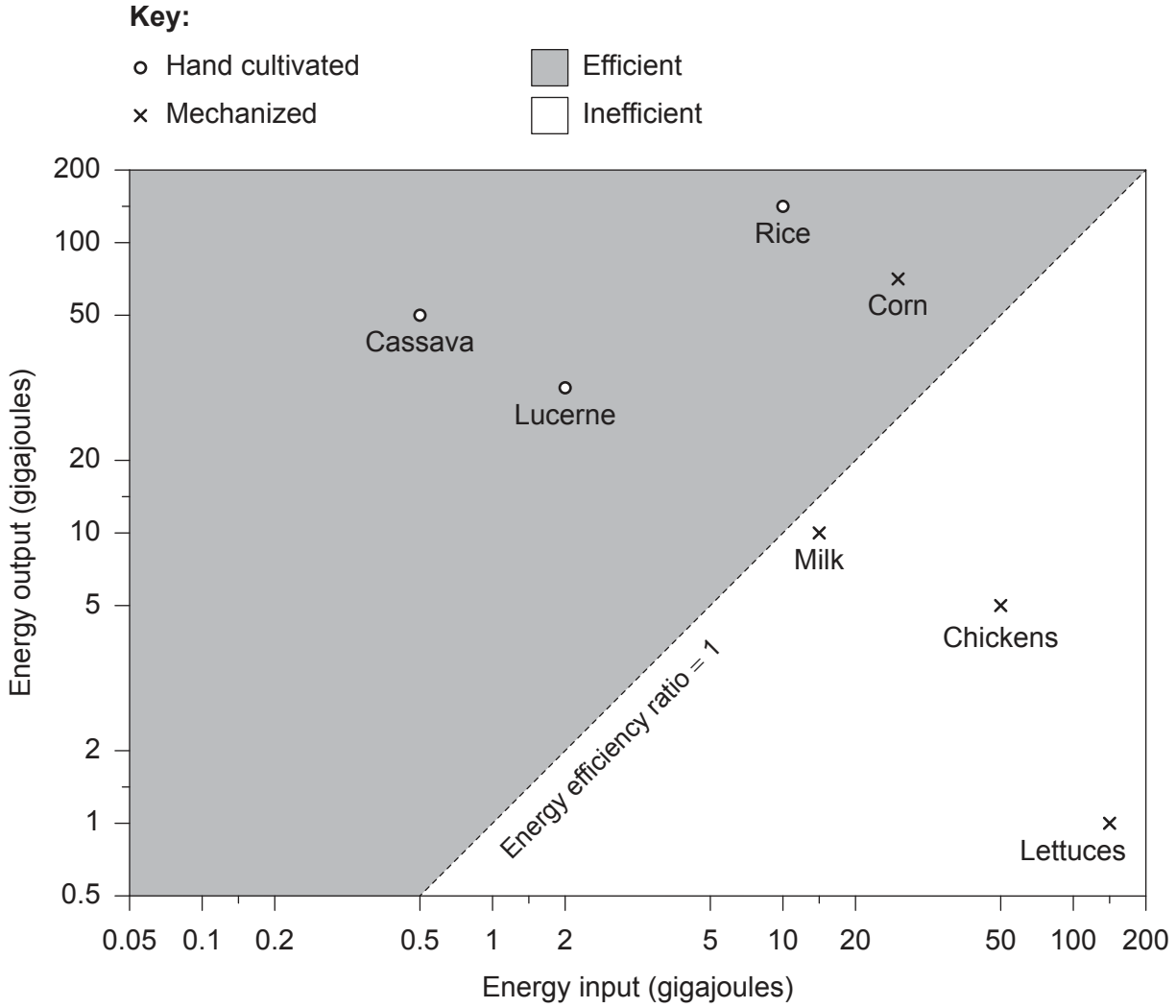
**10.** (b) Examine reasons for variations in the spheres of influence for different kinds of leisure facility. [10]

## End of Option E

**Option F — Food and health**

Answer the following question.

**11.** The simplified logarithmic graph shows the energy inputs and outputs for different farm products in gigajoules per hectare per year.




(a) (i) Identify the farm product that has the lowest energy output. [1]

(ii) Identify the farm product that has the highest energy efficiency. [1]

(b) Outline **one** way in which energy input changes as a result of mechanization. [2]

(c) Explain how food insecurity could be reduced by the use of:

(i) *in vitro* meat; [3]

(ii) vertical farming. [3]

**(Option F continues on the following page)**

**(Option F continued)**

Answer either part (a) or part (b).

**Either**

**12.** (a) To what extent are diseases linked to malnutrition? [10]

**Or**

**12.** (b) Examine how geographic factors affect the rate of diffusion of agricultural innovation. [10]

## End of Option F

**Option G — Urban environments**

Answer the following question.

**13.** Refer to the graph on page 5 of the accompanying resource booklet.

The graph shows the ten fastest growing cities in the world (2015–2020) and the number of new people added to each city per hour in 2020.

(a) (i) State which city in Africa grew the most between 2015 and 2020. [1]

(ii) Identify how many new people per hour were added to the city of Shanghai in 2020. [1]

(b) Outline **one** environmental problem caused by the rapid population increase of cities. [2]

(c) Explain why large cities continue to grow as a result of:

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

(ii) **one** demographic factor. [3]

Answer either part (a) or part (b).

**Either**

**14.** (a) Examine the impacts of slum clearance schemes on **one or more** neighbourhoods. [10]

**Or**

**14.** (b) To what extent do centrifugal population movements affect residential areas of cities? [10]

## End of Option G

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**References:**

**5.** Hossain, A. et al., Agricultural Land Degradation: Processes and Problems Undermining Future Food Security, In: Fahad, S., et al. *Environment, Climate, Plant and Vegetation Growth*, pp. 17–61, 2020, Springer Nature. https://link.springer.com/chapter/10.1007/978-3-030-49732-3_2.

**9** Krungsri Research. *Industry Outlook 2021–2023: Hotel Industry*. [online] Available at: https://www.krungsri.com/en/research/industry/industry-outlook/Services/Hotels/IO/io-hotel-21 [Accessed 14 March 2022]. Source adapted.

**11** Data from *Food policy*, Vol 1, Gerald Leach, Energy and food production, pages 62–73, Copyright Elsevier (1975).