

© International Baccalaureate Organization 2023

All rights reserved. No part of this product may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without the prior written permission from the IB. Additionally, the license tied with this product prohibits use of any selected files or extracts from this product. Use by third parties, including but not limited to publishers, private teachers, tutoring or study services, preparatory schools, vendors operating curriculum mapping services or teacher resource digital platforms and app developers, whether fee-covered or not, is prohibited and is a criminal offense.

More information on how to request written permission in the form of a license can be obtained from <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organisation du Baccalauréat International 2023

Tous droits réservés. Aucune partie de ce produit ne peut être reproduite sous quelque forme ni par quelque moyen que ce soit, électronique ou mécanique, y compris des systèmes de stockage et de récupération d'informations, sans l'autorisation écrite préalable de l'IB. De plus, la licence associée à ce produit interdit toute utilisation de tout fichier ou extrait sélectionné dans ce produit. L'utilisation par des tiers, y compris, sans toutefois s'y limiter, des éditeurs, des professeurs particuliers, des services de tutorat ou d'aide aux études, des établissements de préparation à l'enseignement supérieur, des fournisseurs de services de planification des programmes d'études, des gestionnaires de plateformes pédagogiques en ligne, et des développeurs d'applications, moyennant paiement ou non, est interdite et constitue une infraction pénale.

Pour plus d'informations sur la procédure à suivre pour obtenir une autorisation écrite sous la forme d'une licence, rendez-vous à l'adresse <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

© Organización del Bachillerato Internacional, 2023

Todos los derechos reservados. No se podrá reproducir ninguna parte de este producto de ninguna forma ni por ningún medio electrónico o mecánico, incluidos los sistemas de almacenamiento y recuperación de información, sin la previa autorización por escrito del IB. Además, la licencia vinculada a este producto prohíbe el uso de todo archivo o fragmento seleccionado de este producto. El uso por parte de terceros —lo que incluye, a título enunciativo, editoriales, profesores particulares, servicios de apoyo académico o ayuda para el estudio, colegios preparatorios, desarrolladores de aplicaciones y entidades que presten servicios de planificación curricular u ofrezcan recursos para docentes mediante plataformas digitales—, ya sea incluido en tasas o no, está prohibido y constituye un delito.

En este enlace encontrará más información sobre cómo solicitar una autorización por escrito en forma de licencia: <https://ibo.org/become-an-ib-school/ib-publishing/licensing/applying-for-a-license/>.

Geography

Higher level

Paper 1

4 May 2023

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

2 hours 15 minutes

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer the questions in three options.
- The accompanying **geography resource booklet** is required for this examination paper.
- The maximum mark for this examination paper is **[60 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

Answer the questions in **three** 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	5 289	232
Pakistan	778 720	31 472	17 032	181 503
Myanmar	657 740	130 903	20 630	13 477
Thailand	511 770	90 241	7 265	0
Philippines	298 170	25 962	3 855	0
Laos	230 800	48 963	0	0
Nepal	136 800	20 131	0	228
Bhutan	47 000	1 407	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

Blank page

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

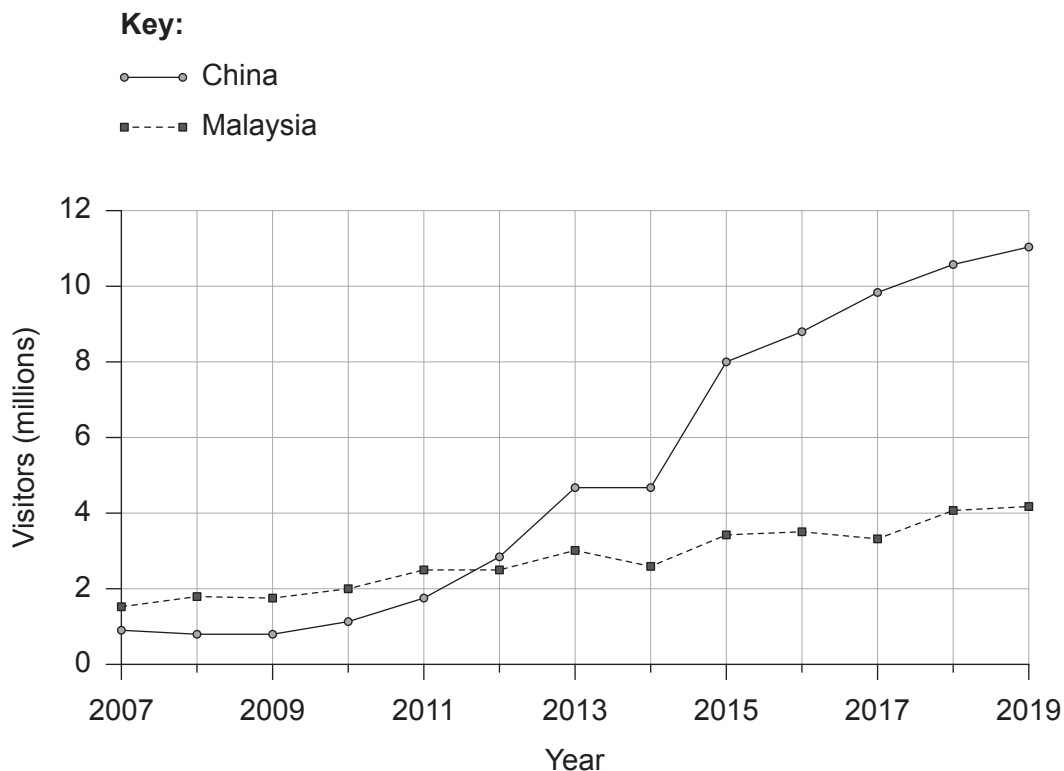
8. (b) Examine how economic **and** social factors may reduce the vulnerability of communities to geophysical hazard risk. [10]

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

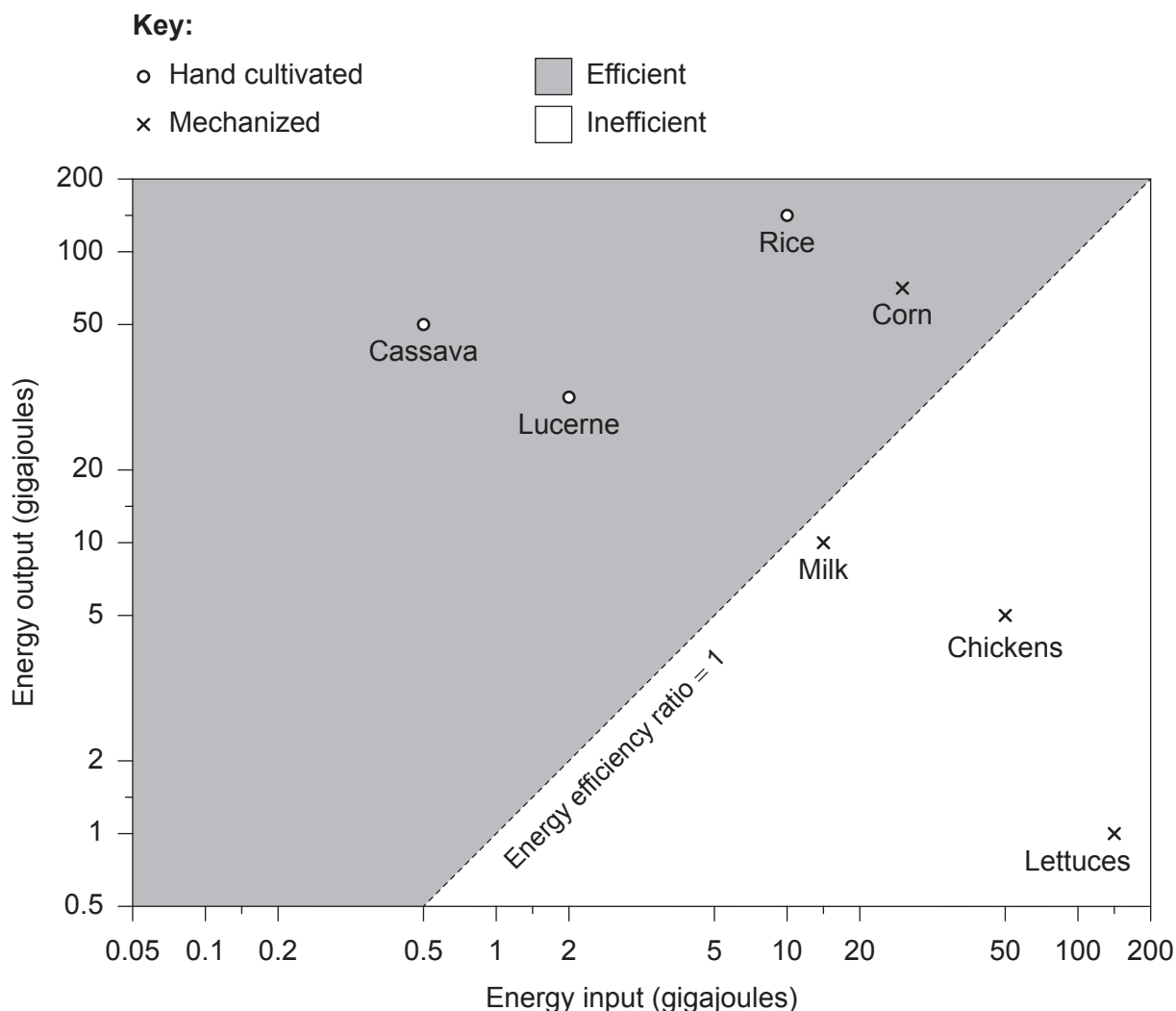
- 10.** (b) Examine reasons for variations in the spheres of influence for different kinds of leisure facility. [10]

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

5.

Disclaimer:

Content used in IB assessments is taken from authentic, third-party sources. The views expressed within them belong to their individual authors and/or publishers and do not necessarily reflect the views of the IB.

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).

All other texts, graphics and illustrations © International Baccalaureate Organization 2023