Diploma Programme
Programme du diplôme
Programa del Diploma

Geography
Higher level
Paper 1

Wednesday 12 May 2021 (afternoon)

45 minutes

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer the questions in one option.
- The accompanying **geography resource booklet** is required for this examination paper.
- The maximum mark for this examination paper is **[20 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

2221 – 5201

Answer the questions in **one** option.

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. The table shows the location and height, in metres, of the world's tallest waterfalls.

	Name	**Location**	**Height of waterfall (m)**
1	Kerepakupai Merú	Venezuela	979
2	Tugela Falls	South Africa	948
3	Tres Hermanas	Peru	914
4	Olo'upena Falls	USA	900
5	Yumbilla	Peru	896
6	Vinnufallet	Norway	865
7	Skorga	Norway	865
8	Pu'uka'oka Falls	USA	840
9	Mattenbachfälle	Switzerland	840
10	James Bruce Falls	Canada	840
11	Browne Falls	New Zealand	836
12	Kjerrskredfossen	Norway	830
13	Los Chorros de Cura	Venezuela	821
14	Waihilau Falls	USA	792
15	Colonial Creek Falls	USA	783
16	Mongefossen	Norway	773
17	Gocta	Peru	771
18	Balåifossen	Norway	765
19	Johannesburg Falls	USA	751
20	Terror Falls	New Zealand	750

(a) (i) Identify which country has the most waterfalls between 780 m and 860 m in height. [1]

(ii) State the mode for height from the table above. [1]

(b) Outline the main features of **one** landform, **other than** a waterfall, created by river erosion. [2]

(c) Explain **two** reasons why rates of erosion could vary at different waterfalls, such as those shown in the table. [3+3]

(Option A continues on the following page)

(Option A continued)

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

Either

2. (a) Examine how human **and** physical factors can contribute to a low risk of river flooding. [10]

Or

2. (b) Examine why it can be difficult to achieve stakeholder agreement over how best to manage **one or more** water resources. [10]

End of Option A

Option B — Oceans and coastal margins

Answer the following question.

3. Refer to the diagram on page 2 of the accompanying resource booklet.

The diagram shows the predicted path of Hurricane Irma in August and September 2017.

(a) (i) State the direction that Hurricane Irma is predicted to track in the first three days as a hurricane. [1]

(ii) Estimate the number of hours it is predicted for Hurricane Irma to track from the Leeward Islands to the eastern tip of the Dominican Republic. [1]

(b) Outline **one** reason why hurricane activity may increase when ocean temperatures are warmer. [2]

(c) Explain **two** effects of a hurricane on the physical environment of a coastal margin such as that shown in the diagram. [3+3]

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

Either

4. (a) Examine how the importance of wind and waves varies for the development of **two or more** coastal landforms. [10]

Or

4. (b) Evaluate strategies designed to manage pollution caused by **two or more** types of waste materials in the oceans. [10]

End of Option B

Option C — Extreme environments

Answer the following question.

5. Refer to the map on page 3 of the accompanying resource booklet.

The map shows the location of hot, arid deserts in Australia.

(a) (i) Identify which state has the largest area of named deserts. [1]

(ii) Identify the **two** deserts with the greatest longitudinal (east to west) extent. [1]

(b) Outline **one** reason why rainfall is low in hot, arid deserts. [2]

(c) Explain **two** challenges that low rainfall creates for agriculture in inland deserts such as those shown on the map. [3+3]

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

Either

6. (a) Examine the importance of permafrost in the development of periglacial landscapes. [10]

Or

6. (b) Examine the political issues associated with mineral extraction in **two or more** extreme environments. [10]

End of Option C

Option D — Geophysical hazards

Answer the following question.

7. Refer to the diagram on page 5 of the accompanying resource booklet.

The diagram shows mass movement on slopes in the Swiss Alps between 1995 and 2016. Each dot represents one mass movement.

The varying altitudes of the mass movement and the direction each slope faces are shown.

(a) (i) Identify the altitude range within which the majority of mass movements occur. [1]

(ii) Estimate the number of mass movements occurring above the altitude of 3500 m. [1]

(b) Outline **one** physical factor affecting the speed of a mass movement. [2]

(c) Explain **two** possible strategies to reduce human vulnerability to rapid mass movement hazards in a mountainous area such as this. [3+3]

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

Either

8. (a) Examine the relationship between plate margin type and the character of volcanic activity. [10]

Or

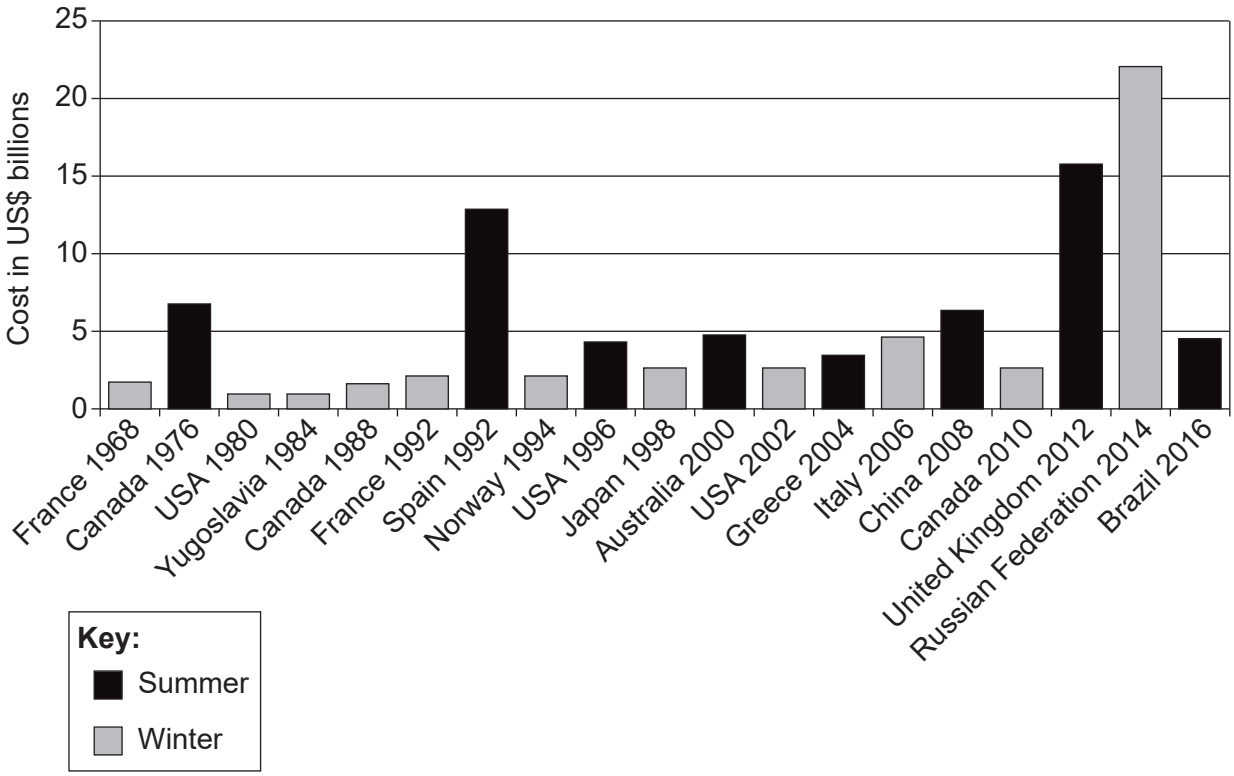
8. (b) Examine how geophysical factors were responsible for the differing impacts of **two** earthquake hazard events. [10]

End of Option D

Option E — Leisure, tourism and sport

Answer the following question.

9. The graph shows the financial costs of hosting sports events at selected Summer and Winter Olympics from 1968 to 2016.



[Source: From Insider. © 2016 Insider Inc. All rights reserved. Used under license. https://www.businessinsider.com.au/ Data from Flyvbjerg, Bent and Stewart, Allison and Budzier, Alexander, The Oxford Olympics Study 2016: Cost and Cost Overrun at the Games (July 1, 2016). *Said Business School WP 2016–20*, available at http://dx.doi.org/10.2139/ssrn.2804554.]

(a) (i) Estimate the range of costs shown for the Winter Olympics, in billions of US dollars. [1]

(ii) Estimate the total cost shown for the Summer Olympics between 2004 and 2016, in billions of US dollars. [1]

(b) Outline **one** possible reason why some higher-income countries have chosen to host the Olympics on multiple occasions. [2]

(c) Explain **two** ways in which participation in international sporting events became more diverse during the years shown in the graph. [3+3]

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

Either

10. (a) Examine the contribution that ecotourism can make to the sustainability of tourism on local and global scales. [10]

Or

10. (b) Examine the geographic relationship between the hierarchy of teams and the distribution of supporters for **one named** national sports league. [10]

End of Option E

Option F — Food and health

Answer the following question.

11. Refer to the map on pages 6 and 7 of the accompanying resource booklet.

The map shows part of the Nazca Valley in Peru, a middle-income country. The scale of the map is 1:50 000 and the contour interval is 50 metres.

(a) (i) State the four-figure grid reference for the spot height of 1062 metres in the northeast of the map. [1]

(ii) Estimate the area, in km^2, of cultivated land to the west of easting 02. [1]

(b) Outline **one** way in which the use of genetically modified organisms (GMOs) could help increase food production from cultivated land. [2]

(c) Explain **one** physical factor **and one** human factor contributing to the diffusion of **one named** water-borne disease through an area such as this. [3+3]

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

Either

12. (a) Examine how spatial variations in food consumption can impact upon life expectancy. [10]

Or

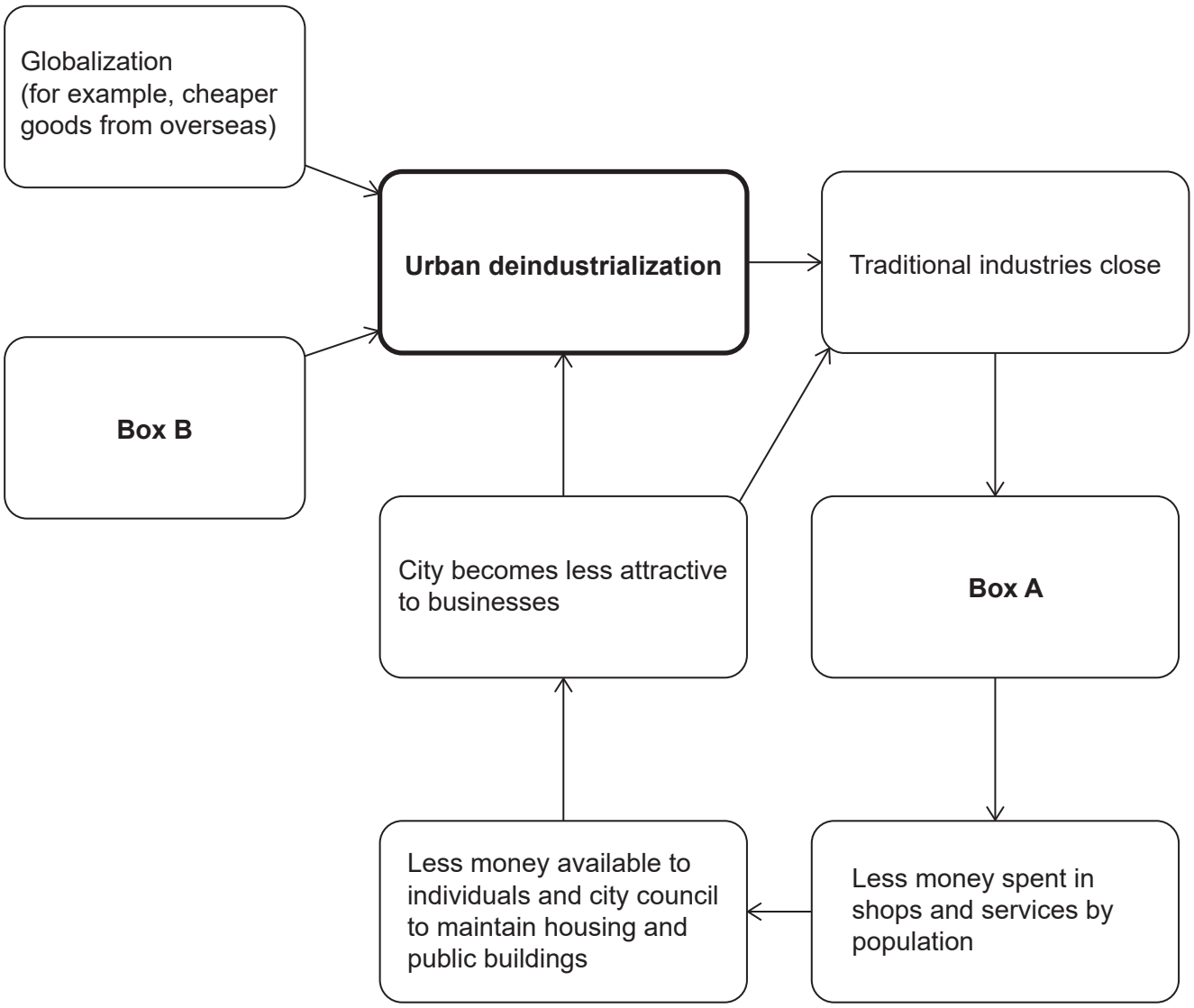
12. (b) Examine the reasons why food insecurity remains high in many places. [10]

End of Option F

Option G — Urban environments

Answer the following question.

13. The diagram shows the cycle of urban deprivation in a high-income country.



(a) (i) State the factor that belongs in **box A**. [1]

(ii) State **one** political factor that could be included in **box B**. [1]

(b) Outline how **one** physical factor can affect the location of low-income residential areas in a city. [2]

(c) Explain **two** possible ways of solving the long-term issue of urban social deprivation in an area such as this. [3+3]

(Option G continues on the following page)

(Option G continued)

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

Either

14. (a) Examine the influence of **two or more** physical factors on patterns of economic activity in urban environments. [10]

Or

14. (b) Examine the management challenges in cities experiencing rapid population growth. [10]

End of Option G

References:

Option A Adapted from https://www.worldwaterfalldatabase.com/tallest-waterfalls/total-height. Information presented on the World Waterfall Database is constantly being re-evaluated and while we strive to keep it as accurate as possible, there are entries in our Tallest list(s) which need to be more closely scrutinized and as such the heights we currently have presented may or may not be entirely accurate.

Option E From Insider. © 2016 Insider Inc. All rights reserved. Used under license. https://www.businessinsider.com.au/ Data from Flyvbjerg, Bent and Stewart, Allison and Budzier, Alexander, The Oxford Olympics Study 2016: Cost and Cost Overrun at the Games (July 1, 2016). *Said Business School WP 2016–20*, available at http://dx.doi.org/10.2139/ssrn.2804554.