

Geography

Higher level

Paper 2

Wednesday 7 November 2018 (morning)

2 hours

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer three questions. Each question is worth **[20 marks]**.
- Each question must be selected from a different optional theme, A – G.
- Do not answer two questions on the same optional theme.
- Use case studies, examples, maps and/or diagrams where relevant.
- A copy of the geography paper 2 resources booklet is required for this paper.
- The maximum mark for this examination paper is **[60 marks]**.

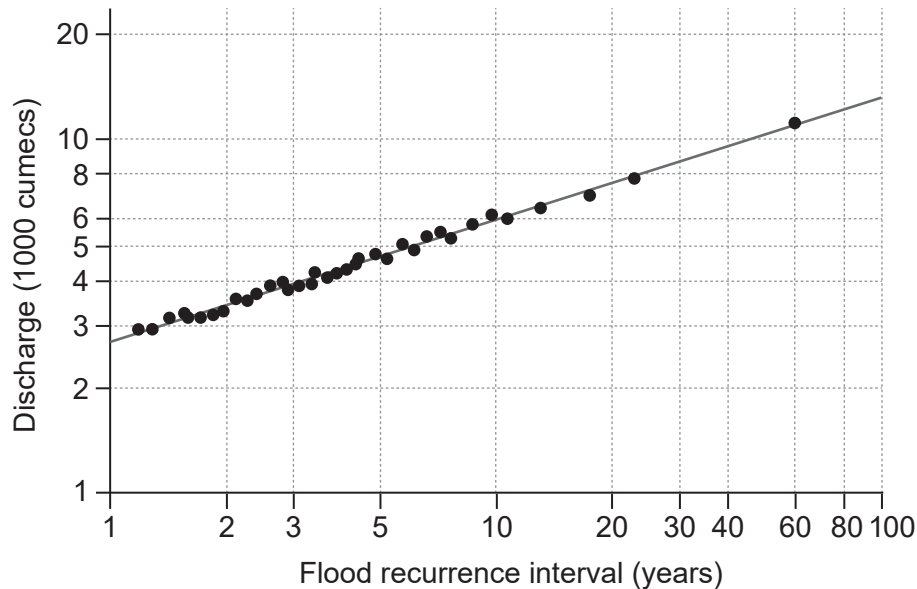
Option	Questions
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Answer **three** questions. Each question must be selected from a different optional theme.
(Do not answer two questions on the same optional theme.)

Wherever possible, answers should include case studies and examples, and where relevant, large, well drawn maps and diagrams.

Option A — Freshwater – issues and conflicts

1. The logarithmic graph shows the discharge of a river and the flood recurrence interval.



[Source: copyright International Baccalaureate Organization, 2017]

- (a) (i) State the relationship between the discharge and the flood recurrence interval shown on the graph. [1]
- (ii) Suggest why a logarithmic graph was used to show these data. [2]
- (iii) Estimate the flood recurrence interval for a discharge of 10 000 cumecs. [1]
- (b) Suggest how changes over time in the amount of water stored as ice in the hydrological cycle could:
 - (i) lead to increased river flows; [3]
 - (ii) affect the size of **one or more** other stores in the hydrological cycle. [3]
- (c) Examine the environmental impacts of agriculture on water quality. [10]

(Option A continues on the following page)

(Option A continued)

2. If you choose to answer this question refer to the map on pages 2 and 3 in the resources booklet.

The map extract shows part of the Sagarmatha National Park in Nepal.

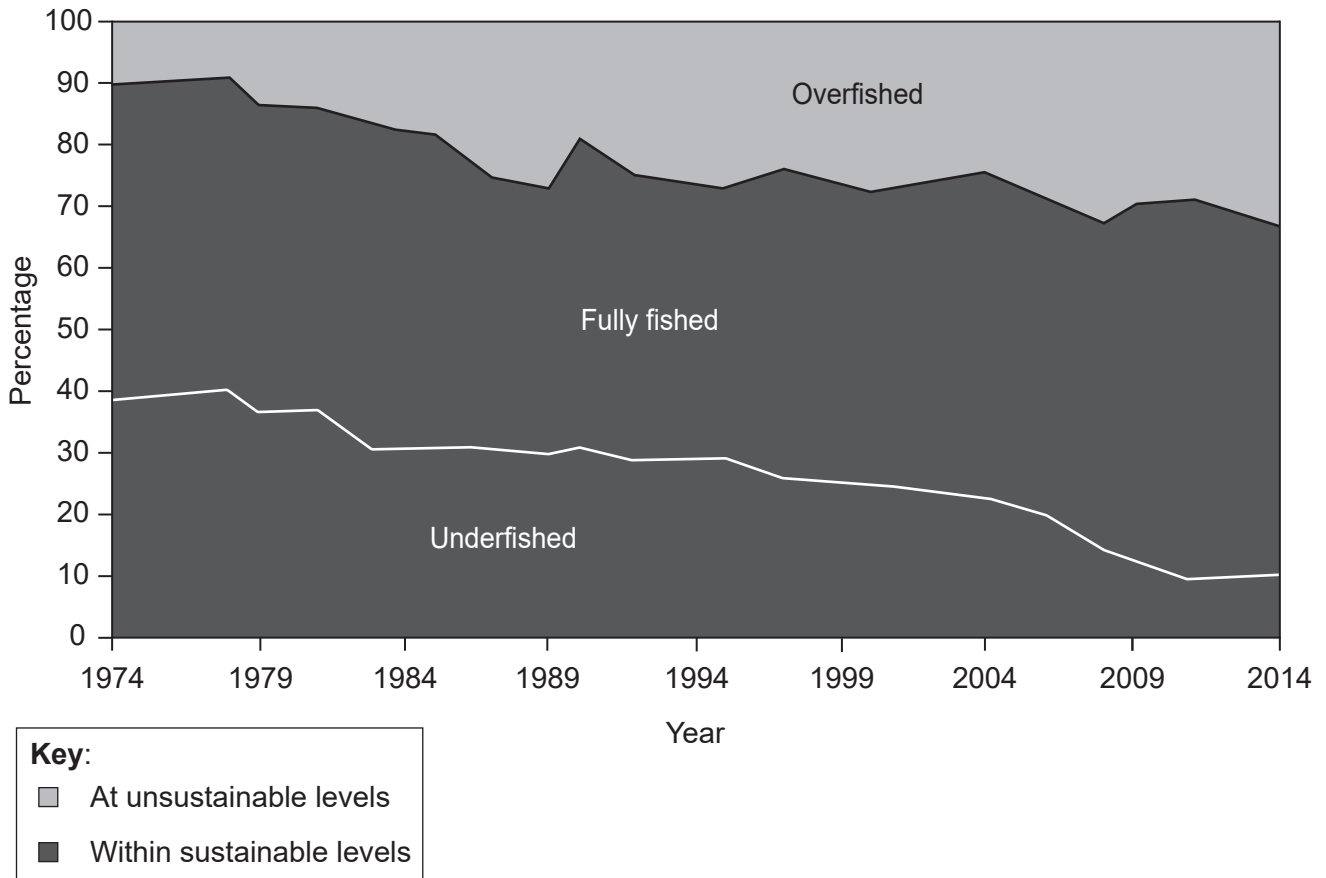
The scale is 1:50 000 and the contour interval is 40 metres.

- (a) (i) State the direction of flow of the Phungi Khola river at A. [1]
- (ii) Using map evidence, outline **one** reason why the Phungi Khola river is likely to have seasonal variations in its discharge. [2]
- (iii) Using map evidence, state why river discharge at B is likely to be significantly higher than at C throughout the year. [1]
- (b) Explain **two hydrological** changes that may result from the construction of a dam in an area such as the Sagarmatha National Park. [3+3]
- (c) With reference to **one named** river basin, discuss the different strategies used to meet the competing demands on the water supply. [10]

End of Option A

Option B — Oceans and their coastal margins

3. The graph shows global trends in marine fish stocks between 1974 and 2014.



[Source: Food and Agriculture Organization of the United Nations, 2016, FAO Fisheries and Aquaculture Department, *The State of World Fisheries and Aquaculture: Contributing to food security and nutrition for all*, <http://www.fao.org/3/a-i5555e.pdf>. Reproduced with permission]

- (a) (i) Outline the trend in overfished stocks shown on the graph. [2]
- (ii) Briefly outline **one** consequence of overfishing. [2]
- (b) Explain the occurrence of:
- (i) mid-ocean ridges; [3]
- (ii) ocean trenches. [3]
- (c) Evaluate the effectiveness of strategies to manage conflicting human pressures on **one named** area of coastline. [10]

(Option B continues on the following page)

(Option B continued)

- 4.** If you choose to answer this question refer to the graph on page 4 in the resources booklet.

The graph shows the relative strength of El Niño and La Niña events from 1950 to 2016.

- (a) Using information on the graph:
- (i) describe the changes in the strength of El Niño events from 1950 to 1998; [2]
 - (ii) describe changes in the duration of La Niña events from 1950 to 2016. [2]
- (b) Explain **one** economic benefit **and one** environmental benefit of mangrove swamps. [3+3]
- (c) Examine the relationships between the oceanic sovereignty rights of nations and exclusive economic zones (EEZs). [10]

End of Option B

Option C — Extreme environments

5. If you choose to answer this question refer to the photograph on page 5 in the resources booklet.

The photograph shows part of the Himalaya in the Everest region of Nepal in summer.

- (a) (i) Referring to the photograph, identify landform A and landform B. [1]
 - (ii) Briefly outline how the landform at C was formed. [3]
 - (b) Explain **two** possible challenges posed by the environment to the economic activities of people living in areas like area D shown in the photograph. [3+3]
 - (c) Examine the opportunities for agriculture in hot, arid areas. [10]
6. (a) (i) Outline **two** climatic characteristics of a periglacial extreme environment. [1+1]
- (ii) Describe **two** characteristics of permafrost. [2]
- (b) Explain the role of water in **two** weathering processes in hot, arid environments. [3+3]
- (c) “Global climate change will create more challenges than opportunities for indigenous populations.” Discuss this statement, with reference to one or more extreme environments. [10]

End of Option C

Option D — Hazards and disasters – risk assessment and response

7. If you choose to answer this question refer to the map on page 6 in the resources booklet.

The map shows the rainfall in Indian states for the 2014 monsoon season compared to the long-term average for the monsoon season.

- (a) (i) Outline the distribution of areas in India with lower than normal amounts of rainfall. [2]
 - (ii) Outline what is meant by a drought hazard. [2]
 - (b) Explain **two** reasons for the increase in the numbers of people affected by disasters in recent years. [3+3]
 - (c) Examine the importance of re-assessing risk **and** re-examining vulnerability following any major hazard event. [10]
8. (a) (i) Outline the main features of **one** scale used to measure the magnitude of **one named** hazard type. [2]
- (ii) Describe what is meant by hazard risk. [2]
- (b) Explain **two** ways in which people's vulnerability to a tectonic hazard may be reduced. [3+3]
- (c) Examine why some hazard events are more predictable than others. [10]

End of Option D

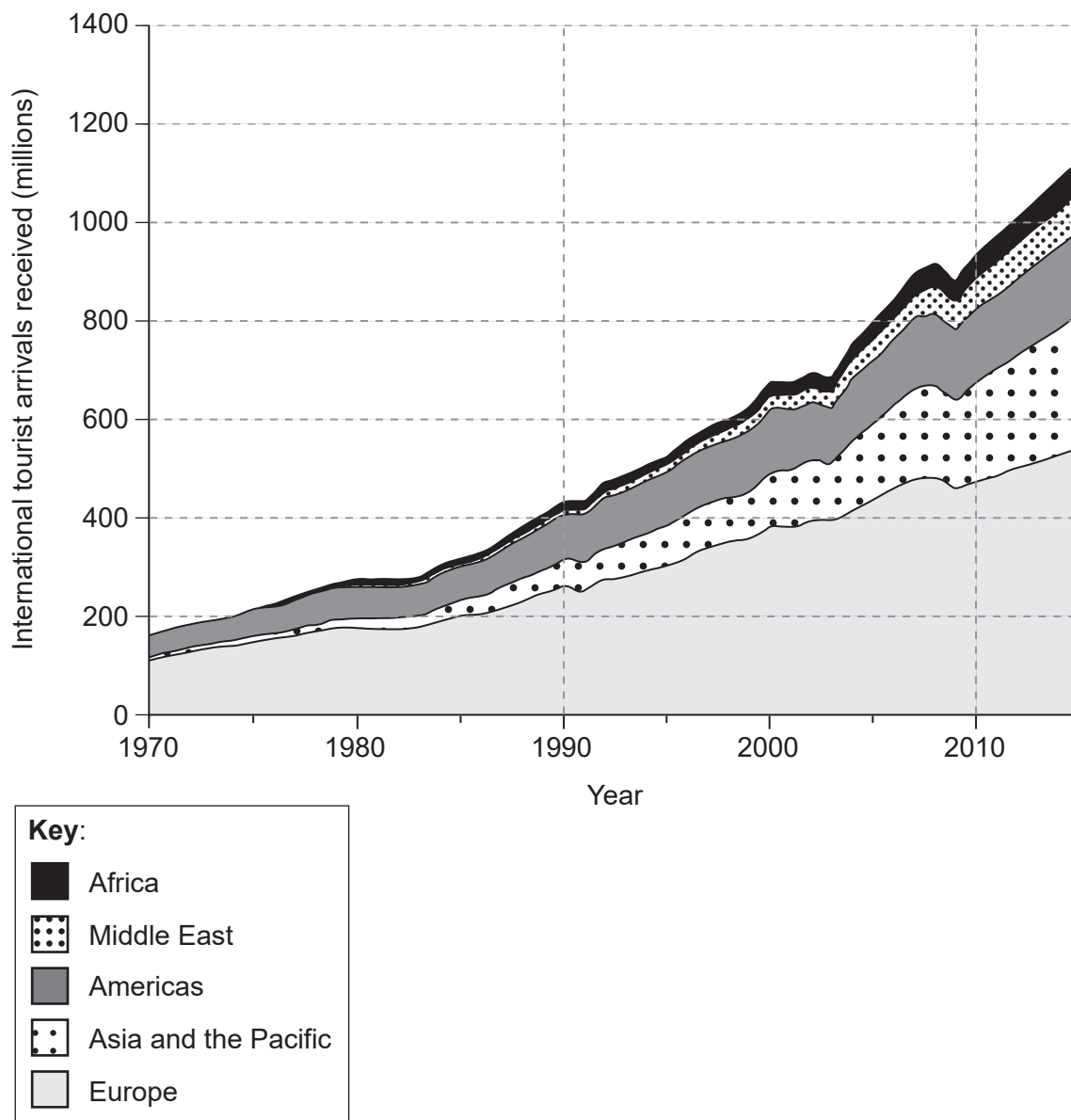
Option E — Leisure, sport and tourism

9. (a) Using **two** different examples, outline what is meant by:
- (i) the catchment area of recreation and sports facilities; [2]
 - (ii) the range of recreation and sports facilities. [2]
- (b) Explain **two** management strategies to reduce environmental damage from tourism in **one named** rural area. [3+3]
- (c) Examine the relative importance of factors influencing the distribution of sports facilities in **one or more named** urban areas. [10]

(Option E continues on the following page)

(Option E continued)

10. The graph shows international tourist arrivals, by region, between 1970 and 2015.



[Source: © UNWTO, 92844/46/18. World Tourism Organization (2015),
UNWTO Tourism Highlights, 2015 Edition, UNWTO, Madrid, p.14.]

- (a) (i) Estimate the numbers of tourist arrivals in 2015 for Africa, and for Asia and the Pacific. [2]
- (ii) Outline **one** reason why international tourism data may be unreliable. [2]
- (b) Explain **one** economic factor **and** **one** political factor that may have contributed to the increased numbers of tourist arrivals for Asia and the Pacific from 2000 to 2015. [3+3]
- (c) Examine the cultural **and** political factors that might affect success for countries participating in major international sports. [10]

End of Option E

Turn over

Option F — The geography of food and health

11. If you choose to answer this question refer to the map on page 7 in the resources booklet.

The map shows average daily calorie intake by country.

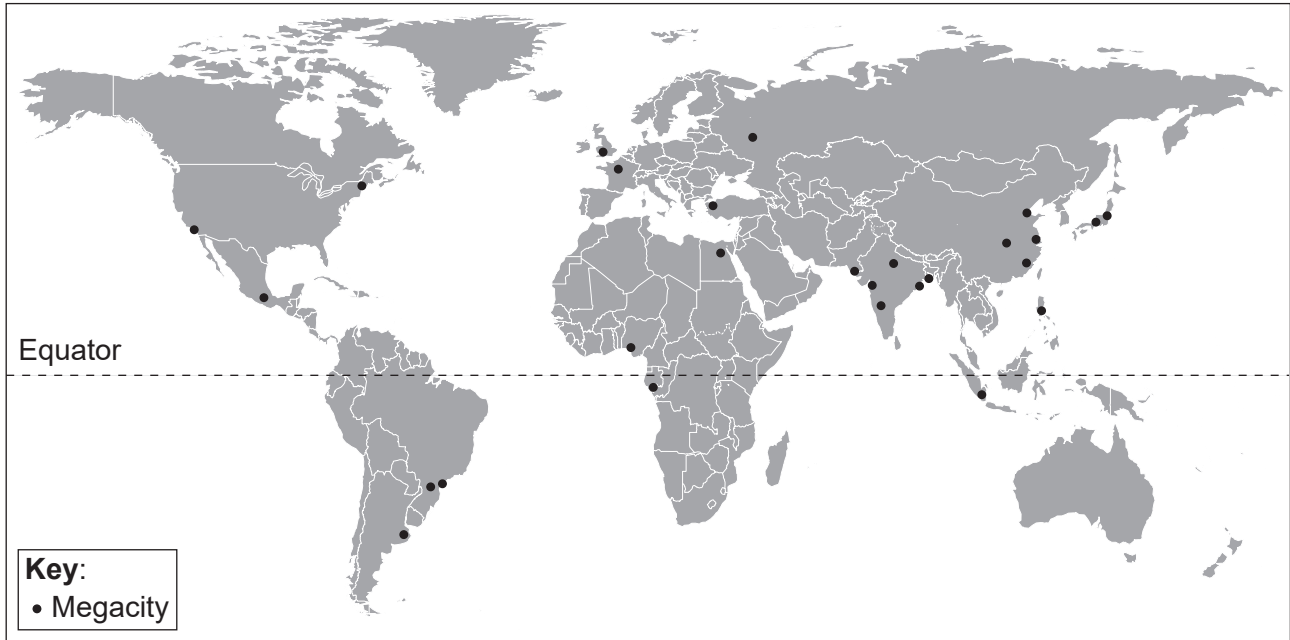
- (a) (i) Describe the distribution of countries with a calorie intake of less than 2390 kcal per person per day. [2]
- (ii) Suggest why it is recommended that people should have an intake of between 2850 and 3480 kcal per person per day. [2]
- (b) Explain how **one** environmental factor **and one** political factor can lead to a decline in food production. [3+3]
- (c) Examine the geographic factors responsible for the incidence and transmission of **one named** disease (vector-borne, water-borne or sexually transmitted). [10]

12. (a) (i) Describe the relationship between GDP (gross domestic product) *per capita* and life expectancy. [2]
- (ii) Outline **one** advantage of using HALE as a measure of a population's health. [2]
- (b) Explain how **one** natural barrier **and one** political barrier might limit the spread of disease. [3+3]
- (c) Examine the impacts of international trade agreements **and** trade barriers on the availability of food in some countries. [10]

End of Option F

Option G — Urban environments

13. The map shows the distribution of megacities in 2015.



[Source: Adapted from the *World Urbanization Prospects, 2014 Revision: Highlights*, by United Nations, Department of Economic and Social Affairs, Population Division © 2014 United Nations. Reprinted with the permission of the United Nations.]

- (a) (i) Outline what is meant by the term “megacity”. [1]
 - (ii) Using the map, describe the global distribution of megacities in 2015. [3]
 - (b) (i) Explain **one** economic reason why large numbers of people have migrated to megacities in recent years. [3]
 - (ii) Explain **one** reason, **other than** migration, why the number of megacities has risen globally in recent years. [3]
 - (c) Evaluate the success of strategies of sustainable city management in **one or more** urban areas. [10]
14. (a) Outline:
- (i) **two** characteristics of the informal sector; [2]
 - (ii) the location of the informal sector in urban areas. [2]
 - (b) Explain how urban stress might result from:
 - (i) environmental factors; [3]
 - (ii) social factors. [3]
 - (c) Examine the causes and effects of the movement of retailing in urban areas to new locations. [10]

End of Option G