

Geography

Higher level

Paper 2

Thursday 18 May 2017 (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
Option A — Freshwater – issues and conflicts	1 – 2
Option B — Oceans and their coastal margins	3 – 4
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Option D — Hazards and disasters – risk assessment and response	7 – 8
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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. (a) Outline **two** environmental problems that may occur downstream from multi-purpose dams. [2+2]
- (b) Define the concept of “maximum sustainable yield” of freshwater. [2]
- (c) With reference to **one named** river basin, explain **two** strategies that have been adopted to meet competing demands for water. [2+2]
- (d) “The negative consequences of river flooding always outweigh the benefits.” Discuss this statement. [10]

(Option A continues on the following page)

(Option A continued)

2. The map shows potential and current hydro-electric power (HEP) production from major dams in some countries and regions in 2012.



- (a) (i) State which country or world region has the highest undeveloped potential for HEP. [1]
- (ii) Estimate the current HEP production in terawatt hours for Europe. [1]
- (iii) Suggest **two** ways in which Australasia can be viewed as an anomaly to the general pattern shown on the map. [1+1]
- (b) Explain **three** factors that may produce a short time lag on a storm hydrograph. [2+2+2]
- (c) Compare the effectiveness of alternative stream management strategies, **other than** dams. [10]

End of Option A

Turn over

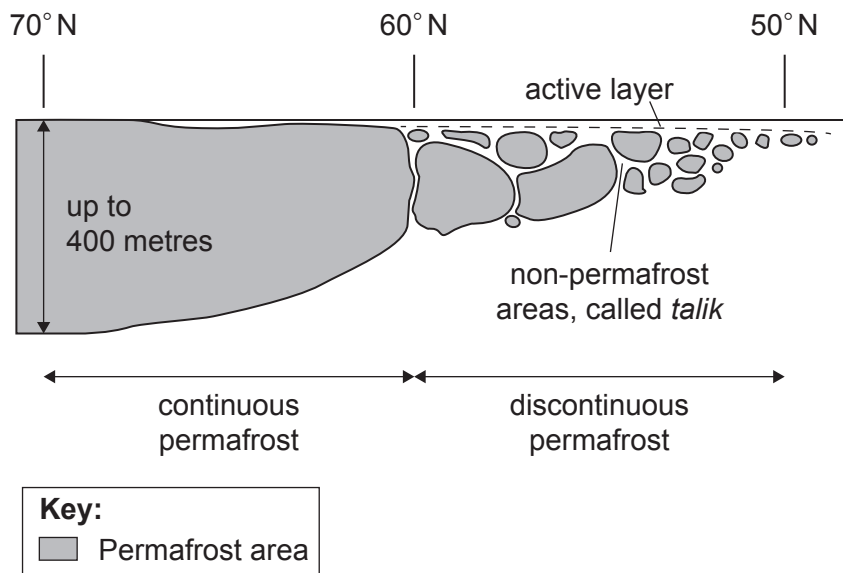
Option B — Oceans and their coastal margins

3. (a) Describe **two** characteristics of oceanic crust. [2+2]
- (b) (i) Briefly outline the oceanic circulation in the Pacific Ocean during an El Niño event. [2]
- (ii) Explain the wind and pressure systems in an El Niño event. [4]
- (c) Examine the spatial and temporal consequences of overfishing. [10]
4. If you choose to answer this question refer to the map on page 2 in the resources booklet.
The map shows some of the threats to the Great Barrier Reef, Queensland, Australia.
- (a) With reference to the map:
- (i) describe the location of the Great Barrier Reef; [1]
- (ii) estimate the length in kilometres of the Great Barrier Reef; [1]
- (iii) suggest how **two** of the threats to the Great Barrier Reef shown on the map may damage coral. [2+2]
- (b) Explain **two** conflicts that may arise as a result of aquaculture. [2+2]
- (c) “The disposal of waste in the oceans is causing serious harm to people and places.”
Discuss this statement. [10]

End of Option B

Option C — Extreme environments

- 5. (a) Outline **two** ways in which people have adapted their **outdoor** activities to extremes of weather in hot, arid environments. [2+2]
 - (b) (i) Distinguish between the terms “accumulation” and “ablation” in the glacial environment. [2]
 - (ii) Explain **two** reasons why many glaciers are retreating. [2+2]
 - (c) “Global climate change will create more opportunities than challenges for indigenous populations.” Discuss this statement, with reference to **one or more** extreme environments. [10]
6. The diagram shows a cross-section of the location of permanently frozen ground (permafrost).



[Source: *Conceptual Frameworks in Geography*, by Alan Clowes and Peter Comfort, copyright Pearson Education Limited, 1987, page 228.]

- (a) Describe how the characteristics of permafrost vary with latitude. [4]
- (b) (i) Outline how the seasonal changes taking place in the active layer differ between 50°N and 60°N. [2]
- (ii) Explain **two** ways in which the active layer creates challenges for settlement and/or communications in a permafrost area. [2+2]
- (c) “The opportunities for mineral extraction outweigh the challenges in hot, arid areas.” Discuss this statement. [10]

End of Option C

Turn over

Option D — Hazards and disasters – risk assessment and response

7. (a) Describe the global distribution of **either** volcanoes **or** earthquakes. [4]
- (b) Suggest **three** factors that might affect an individual’s perception of the risk posed by tectonic hazards. [2+2+2]
- (c) “Hazard prediction is ineffective in reducing the impact of hazard events on people’s lives and property.” Discuss this statement, with reference to **two different** hazard types. [10]

(Option D continues on the following page)

(Option D continued)

8. The diagram shows the structure of a hurricane (tropical cyclone, typhoon).



- (a) Referring to the diagram, briefly describe **two** atmospheric conditions shown in:
 - (i) the eye; [1]
 - (ii) the eyewall. [1]

- (b) Briefly describe the surface pressure **and** winds likely to be found in:
 - (i) the eye of a typical hurricane; [1]
 - (ii) the eyewall of a typical hurricane. [1]

- (c) Explain **three** conditions necessary for the formation of tropical hurricanes. [2+2+2]

- (d) "Poorer communities are more vulnerable to the impacts of hazard events than richer communities." Discuss this statement. [10]

End of Option D

Option E — Leisure, sport and tourism

9. The table shows the world’s fifteen most visited cities in 2013.

City	Visitors (millions)	City	Visitors (millions)	City	Visitors (millions)
Bangkok	15.98	Istanbul	10.37	Seoul	8.19
London	15.96	Dubai	9.89	Milan	6.83
Paris	13.92	Kuala Lumpur	9.20	Rome	6.71
Singapore	11.75	Hong Kong	8.72	Shanghai	6.50
New York	11.52	Barcelona	8.41	Amsterdam	6.35

[Source: Adapted from Derek Thompson, The New #1 Tourist Destination in the World? It’s Bangkok, May 28, 2013. <https://www.theatlantic.com/business/archive/2013/05/the-new-1-tourist-destination-in-the-world-its-bangkok/276301>. Republished with permission of *The Atlantic*; permission conveyed through Copyright Clearance Center, Inc.]

- (a) (i) Describe the global pattern of the most visited cities. [3]
 - (ii) State the median value of visitor numbers in 2013. [1]
 - (b) (i) Outline what is meant by the term “ecotourism”. [2]
 - (ii) Explain **one** strength **and one** weakness of ecotourism for local communities. [2+2]
 - (c) For **one named** national sports league, examine the relationship between the location of its teams and the places where their supporters live. [10]
10. (a) Outline **two** types of carrying capacity that apply to rural areas. [4]
- (b) Explain how land values **and** accessibility can affect the distribution of sports facilities within urban areas. [3+3]
- (c) Evaluate the role of tourism as a development strategy in low-income countries. [10]

End of Option E

Option F — The geography of food and health

11. If you choose to answer this question refer to the map on page 3 in the resources booklet.

The map shows the life expectancy at birth for countries other than those in the Americas.

- (a) Describe the pattern of life expectancy shown on the map. [4]
- (b) Explain **three** indicators, **other than** life expectancy, which can be used to measure the health of the population in a country. [2+2+2]
- (c) “Food miles are an excellent indicator of the environmental impact of agriculture.” Discuss this statement. [10]

12. If you choose to answer this question refer to map A on pages 4 and 5 and map B on page 5 in the resources booklet.

Map A shows part of the urban area of Nashville, US. The scale of the map is 1:24 000 and the contour interval is 3 metres.

Map B shows the distribution of obesity, a form of malnutrition, for different areas of Nashville.

- (a) (i) Outline what is meant by the term “malnutrition”. [2]
- (ii) State the obesity range of values for area X and area Z on map B. [2]
- (b) Using evidence from map A, suggest **two** reasons why the obesity rate in area X is different from that in area Z. [3+3]
- (c) Evaluate the success of management strategies applied in any country or region for **one** vector-borne, water-borne **or** sexually transmitted disease. [10]

End of Option F

Option G — Urban environments

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

The map shows the distribution of the neighbourhoods in an African city with low incomes and high population density.

- (a) (i) With reference to the map, describe the distribution of neighbourhoods with low incomes and high population density. [3]
- (ii) Outline **three** possible **economic** reasons for the location of neighbourhoods with low incomes and high population density in the urban area shown on the map. [3]
- (b) Analyse the contribution of natural change to population density patterns in urban areas. [4]
- (c) To what extent has **one named** housing management strategy been successful in creating a more sustainable city? [10]

(Option G continues on the following page)

(Option G continued)

14. The graph shows variations in ground level (tropospheric) ozone in Mexico City, Mexico over a 24-hour period.

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- (a) (i) Describe the changes in ground level ozone in Mexico City over the 24-hour period. [3]
- (ii) State **one** possible source of ground level ozone. [1]
- (b) Explain **two** strengths **and one** weakness of **one named** city's attempt to reduce urban pollution. [2+2+2]
- (c) Examine the effects of the movement of economic activity to derelict land such as brownfield sites. [10]

End of Option G
