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Core theme – patterns and change

Section A

Geography
Higher level and standard level
Paper 1

Tuesday 7 November 2017 (afternoon)

1 hour 30 minutes

Candidate session number

Grid for candidate session number

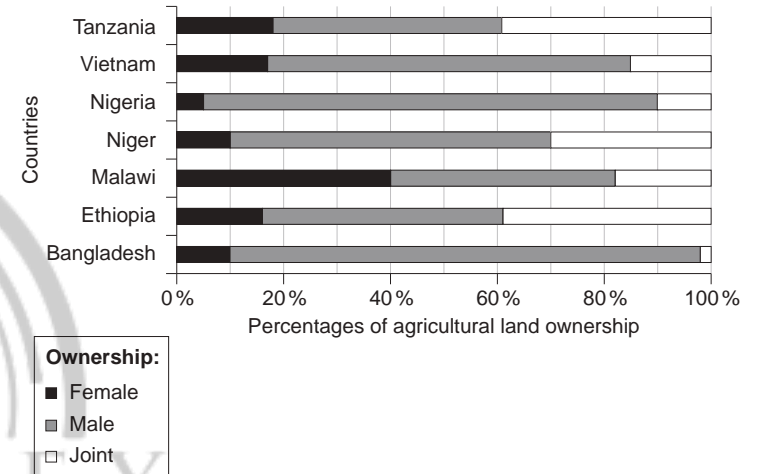
Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Section A: answer all questions.
- Section B: answer one question.
- Answers must be written within the answer boxes provided.
- Use examples, maps and/or diagrams where relevant.
- The maximum mark for this examination paper is [60 marks].

Answer all questions. Answers must be written within the answer boxes provided.

1. Populations in transition

The graph shows the percentage ownership, by gender, of agricultural land for selected countries.



[Source: Food and Agriculture Organization of the United Nations, Gender and Land Rights Database, http://www.fao.org/gender-landrights-database/data-map/statistics/en/?sta_id=1168. Reproduced with permission.]

(a) State the country with the biggest gap between female and male land ownership. [1]

Answer box for question (a) with dotted lines for writing.



(Question 1 continued)

- (b) Suggest **two** reasons why the percentage of female land ownership in Malawi is similar to the percentage of male land ownership in Malawi.

[2+2]

Reason 1:

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Reason 2:

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Please **do not** write on this page.

Answers written on this page
will not be marked.



(This question continues on page 5)



24EP03



24EP04

(Question 1 continued)

(c) Explain **three** socio-economic impacts of a youthful population for a country. [2+2+2]

Impact 1:

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Impact 2:

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Impact 3:

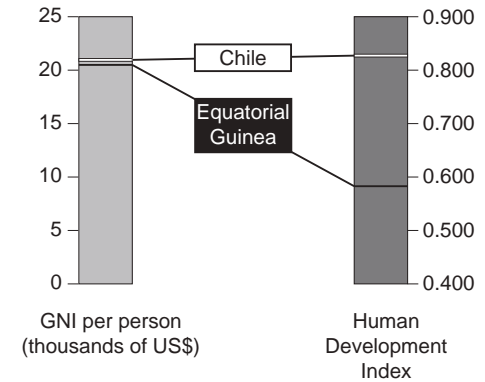
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2. Disparities in wealth and development

The graph shows the gross national income (GNI) per person and the Human Development Index (HDI) score for two countries in 2015.



[Source: 2015 Human Development Report 'Work for Human Development'. Human Development Report Office, United Nations Development Programme. http://hdr.undp.org/sites/default/files/2015_human_development_report.pdf]

(a) Define the term *GNI* (per person). [2]

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(This question continues on the following page)



24EP05



24EP06

(Question 2 continued)

(b) Using evidence from the graph, outline why Chile is more developed than Equatorial Guinea.

[2]

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.....

(Question 2 continued)

(c) Explain **two** reasons why countries with similar GNI per person can have very different HDI scores.

[2+2]

Reason 1:
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.....
Reason 2:
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(This question continues on the following page)



24EP07

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(This question continues on the following page)



24EP08

(Question 2 continued)

(d) Infant mortality rate is defined as the number of children who die before their first birthday per 1000 live births. Suggest **one** advantage **and one** disadvantage of using infant mortality as a measure of socio-economic development. [2+2]

Advantage:

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Disadvantage:

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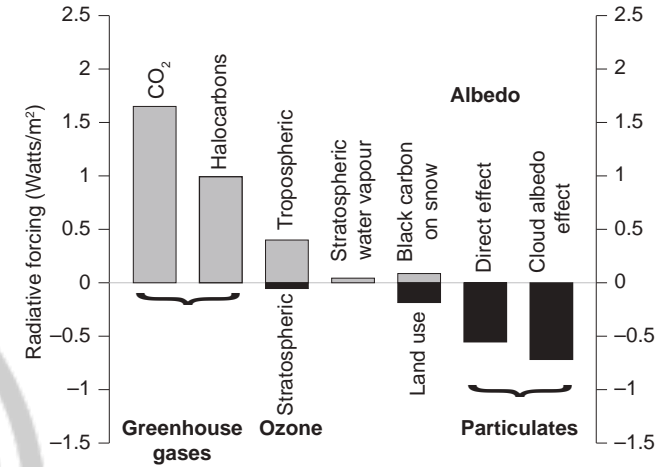
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3. Patterns in environmental quality and sustainability

The graph shows external forcings, such as greenhouse gases, causing changes in the Earth's atmospheric system.



[Source: Figure SPM.2 from Climate Change 2007: The Physical Science Basis. Working Group I Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.]

(a) State which external forcing shown on the graph has the greatest impact on temperature in the atmosphere. [1]

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(This question continues on the following page)



(Question 3 continued)

(b) Outline what is meant by "albedo". [2]

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(c) Briefly describe the difference between stratospheric ozone and tropospheric ozone. [2]

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Please **do not** write on this page.
Answers written on this page
will not be marked.

(This question continues on page 13)



24EP11



24EP12

(Question 4 continued)

(a) (i) Describe the trend for currently-producing oil fields shown on the graph for the period 2015–2030. [3]

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.....

(ii) Suggest **two** possible reasons for the trend you described in (a)(i). [1+1]

Reason 1:

Reason 2:

(Question 4 continued)

(b) Briefly suggest what is meant by “unconventional” oil and gas. [2]

.....
.....
.....

(c) Explain **two** limitations of **one named** source of renewable energy. [2+2]

Source of renewable energy:

Limitation 1:

Limitation 2:

(This question continues on the following page)



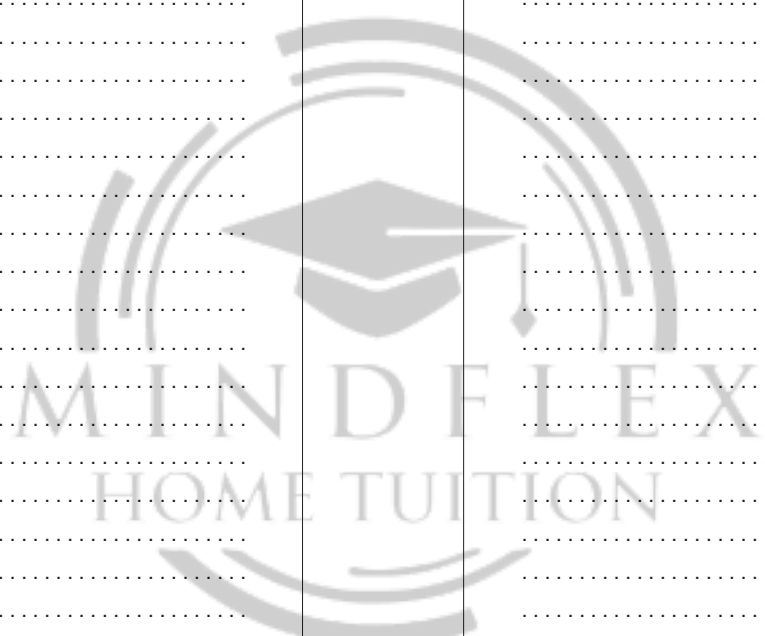
24EP15



24EP16

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Blank writing area on page 20 with horizontal dotted lines for text entry.



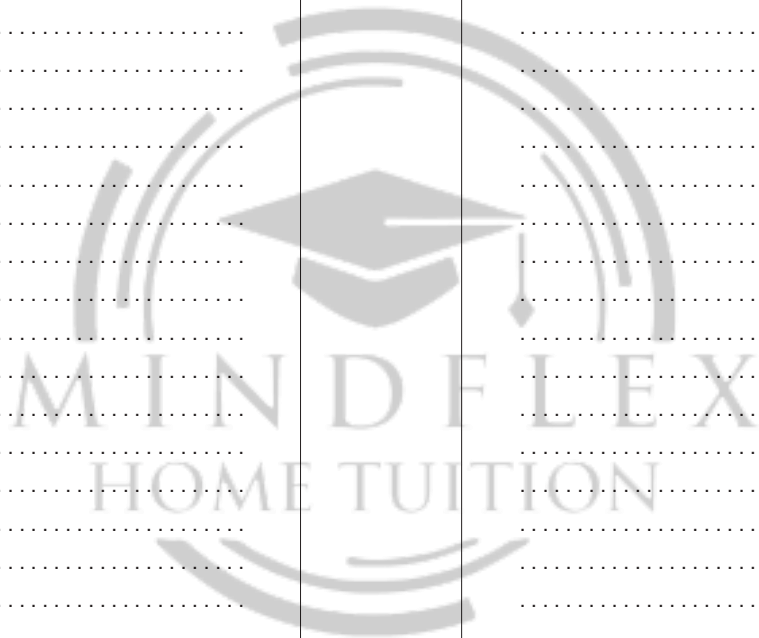
24EP19



24EP20

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[Dotted writing area for page 22]



24EP21

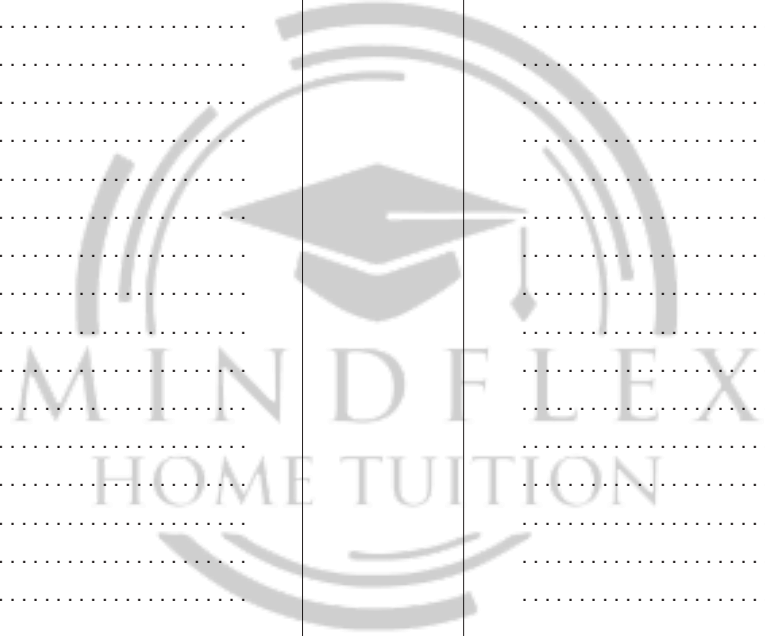
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24EP22

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24EP23

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24EP24


Geography
Standard level
Paper 2

Wednesday 8 November 2017 (morning)

1 hour 20 minutes

Instructions to candidates

- Do not open this examination paper until instructed to do so.
- Answer two 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 **[40 marks]**.

Option	Questions
Option A — Freshwater – issues and conflicts	1 – 2
Option B — Oceans and their coastal margins	3 – 4
Option C — Extreme environments	5 – 6
Option D — Hazards and disasters – risk assessment and response	7 – 8
Option E — Leisure, sport and tourism	9 – 10
Option F — The geography of food and health	11 – 12
Option G — Urban environments	13 – 14

Answer **two** 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.

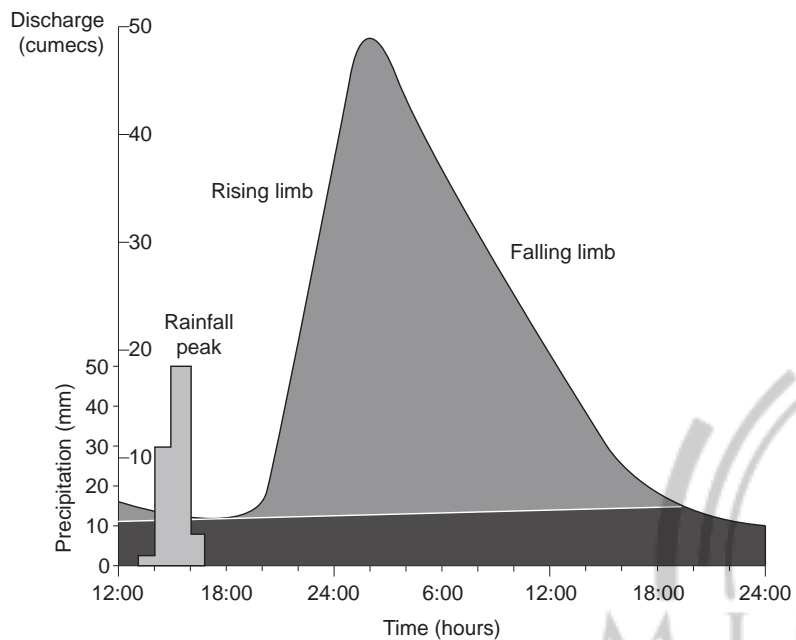
Option A — Freshwater – issues and conflicts

1. (a) Briefly outline **two** processes of river erosion. [2+2]
- (b) (i) Explain how irrigation can lead to salinization. [2]
- (ii) Explain **two** consequences of salinization for farmers. [2+2]
- (c) Discuss the positive **and** negative **hydrological** impacts of dam and reservoir construction. [10]

(Option A continues on the following page)

(Option A continued)

2. The diagram shows a storm hydrograph for a river.



[Source: © International Baccalaureate Organization 2017]

- (a) (i) State the lag time for the storm event shown on the hydrograph. [1]
- (ii) State how many hours the discharge was over 40 cumeecs. [1]
- (iii) Outline why the rising limb on this hydrograph is steeper than the falling limb. [2]
- (b) Explain the formation of **two** landforms on a river floodplain. [3+3]
- (c) Discuss the environmental consequences of eutrophication and the pollution of aquifers. [10]

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End of Option A

Option B — Oceans and their coastal margins

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

The map shows part of the North Atlantic sea floor.

- (a) Identify and briefly describe **two** landforms in box X. [2+2]
- (b) Using examples, explain **two** positive economic impacts that El Niño events can bring. [3+3]
- (c) "Geopolitical conflict is the inevitable outcome of human use of oceans." Discuss this statement. [10]

4. (a) (i) State **two** causes of a negative change in sea level. [2]
- (ii) Briefly describe **one** landform associated with an advancing coast. [2]
- (b) Using examples, explain **two** effects of the oceanic conveyor belt on different places. [3+3]
- (c) "The loss of coral reefs has more serious effects than the loss of mangrove swamps." Discuss this statement. [10]

End of Option B

Option C — Extreme environments

5. If you choose to answer this question refer to the key on page 6 and the map on pages 4 and 5 in the resources booklet.

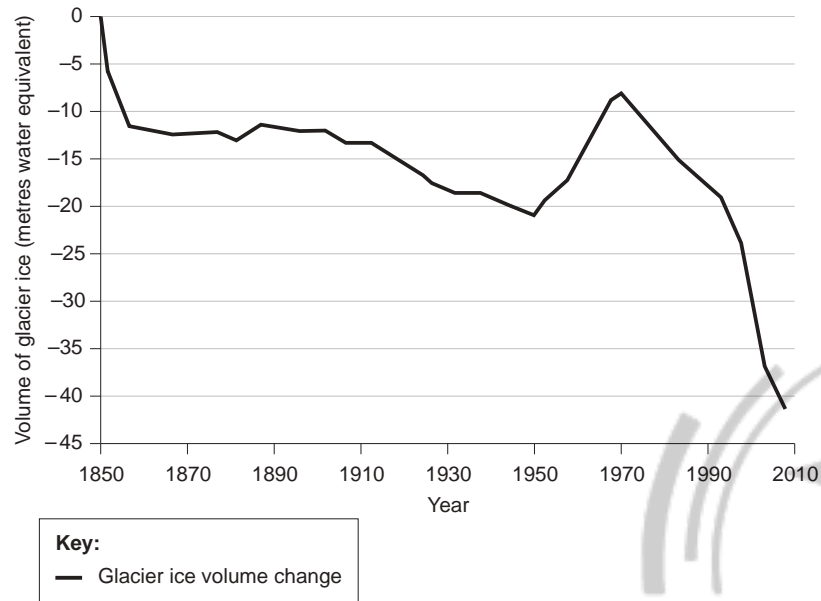
The map extract shows a glaciated area of part of the Lake District in the north-west of England. The scale of the map is 1:25 000. The contour interval is 10 metres.

- (a) (i) Identify **one** landform of glacial erosion in square 3415. [1]
- (ii) State the name of **one** U-shaped valley/trough shown on the map. [1]
- (iii) Estimate the length in kilometres of the walking track between the start of the walking track (footpath) at Highpark Wood (3116) to the summit of Helvellyn (3415). [1]
- (iv) State the height gained from the spot height in square 3315 to the triangulation pillar in square 3415. [1]
- (v) Using map evidence, explain **one** reason, **other than** climate, why mining in this extreme environment is challenging. [2]
- (b) Explain the formation of **one** feature **or** landform of glacial deposition. [4]
- (c) Examine how the balance between challenges and opportunities affects economic activities in **one or more** extreme environments. [10]

(Option C continues on the following page)

(Option C continued)

6. The graph shows the change in the volume of ice for one glacier from 1850 to 2010.



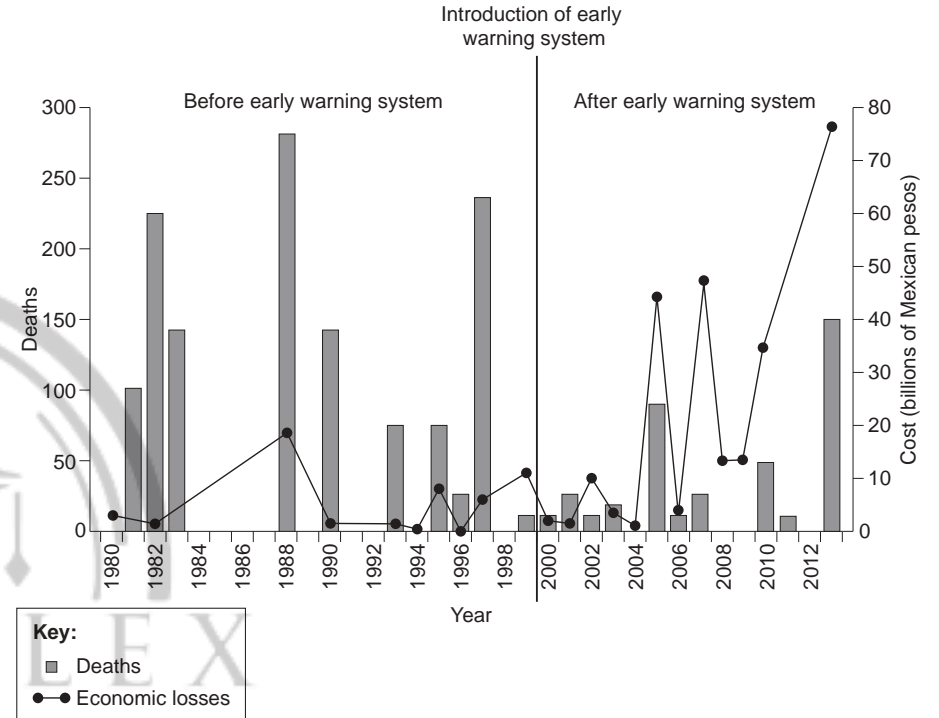
[Source: Reprinted from the Annals of Glaciology with permission of the International Glaciological Society]

- (a) (i) Estimate the volume of ice lost between 1850 and 1950. [1]
- (ii) State the year when the glacier began a continuous decline lasting to 2010. [1]
- (iii) Suggest why a short-term increase in glacial ice (positive balance) begins around 1950. [2]
- (b) Distinguish between aridity and infertility in hot, arid areas. [6]
- (c) Examine the causes **and** consequences of the melting of permafrost. [10]

End of Option C

Option D — Hazards and disasters – risk assessment and response

7. The diagram shows the deaths and economic losses resulting from tropical storms in Mexico, before and after the introduction of an early warning system.



[Source: adapted from Víctor Orlando Magaña Rueda *et al.* (2014). El sistema de alerta temprana ante ciclones tropicales desde una perspectiva de riesgo. *H₂O Gestión del agua 1*, January–March 2014. Revista auxiliar de difusión del Sistema de Aguas de la Ciudad de México. Published by Helios Comunicación]

- (a) With reference to the diagram, describe the changes in:
 - (i) number of deaths; [2]
 - (ii) economic losses. [2]
- (b) Suggest reasons for the changes you identified in (a) for:
 - (i) number of deaths; [3]
 - (ii) economic losses. [3]
- (c) Examine the factors that affect the choice of adjustments before, and responses after, **tectonic** (earthquake/volcanic) hazard events. [10]

(Option D continues on the following page)

(Option D continued)

8. (a) (i) Outline what is meant by the term "drought". [2]
- (ii) Briefly describe **one** physical cause of a **located** severe drought. [2]
- (b) Suggest **two** reasons why individuals and communities may underestimate the probability of a severe drought occurring in the region in which they live. [3+3]
- (c) Discuss the reasons why some low-income countries may be more vulnerable than others to the effects of hazard events. [10]

End of Option D

Option E — Leisure, sport and tourism

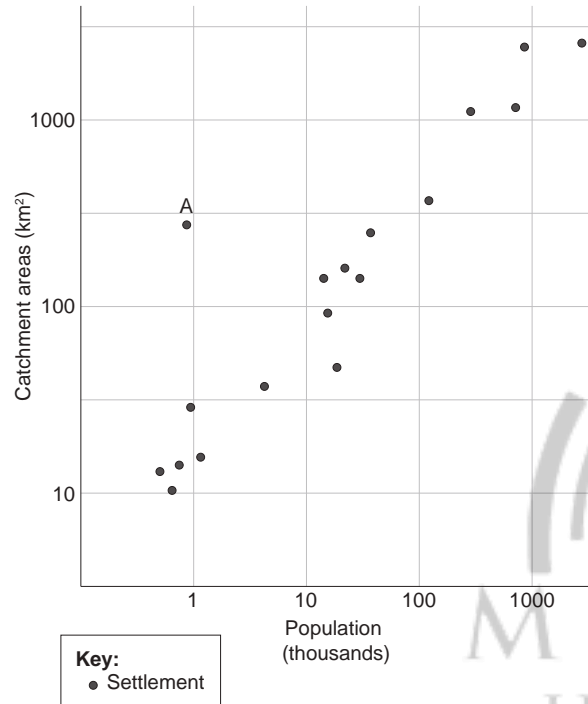
9. (a) Using a located example, outline **two** ways in which sustainable tourism supports the culture of local people. [2+2]
- (b) Explain **two** impacts of tourism on the natural environment of rural areas. [3+3]
- (c) Examine how the benefits of hosting **one or more** major international sporting events have been unevenly distributed. [10]

(Option E continues on the following page)



(Option E continued)

10. The diagram shows the relationship between catchment areas of sports facilities and the population of settlements.



[Source: © International Baccalaureate Organization 2017]

- (a) (i) Describe the general relationship shown by the diagram. [2]
- (ii) Suggest **one** reason why settlement A does not fit the general relationship. [2]
- (b) Suggest **three** possible reasons why the sphere of influence of supporters of a sports team could change over time. [2+2+2]
- (c) Examine the contribution that ecotourism can make to a country's tourist industry. [10]

End of Option E

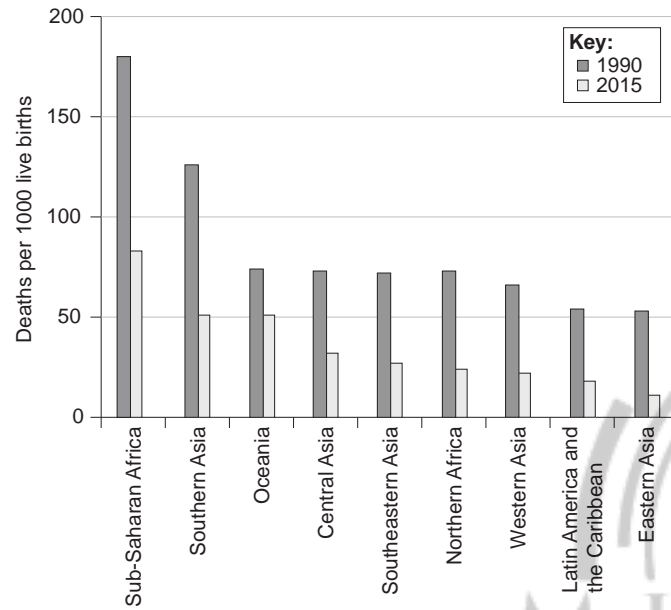
Option F — The geography of food and health

11. (a) (i) State **two** diseases of poverty. [1]
- (ii) Describe the distribution of diseases of poverty. [3]
- (b) Explain **two** types of diffusion in relation to the spread of disease. [3+3]
- (c) To what extent have recent changes in agriculture increased the production and availability of food in low-income countries? [10]

(Option F continues on the following page)

(Option F continued)

12. The graph shows the mortality rates for children under the age of five for world regions between 1990 and 2015.



[Source: United Nations Inter-agency Group for Child Mortality Estimation (UN IGME), 'Levels & Trends in Child Mortality: Report 2015,' Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation, United Nations Children's Fund, New York, 2015.]

Option G — Urban environments

13. The diagram shows the changing poverty rate (those living on less than US\$2 per day) in the capital city, Abidjan, and the smaller cities of the Ivory Coast.

Removed for copyright reasons

- (a) (i) Describe the changes in Sub-Saharan Africa between 1990 and 2015. [1]
- (ii) Identify the region with the greatest **relative** change in mortality rate between 1990 and 2015. [1]
- (iii) Outline why HALE is a better indicator of a nation's health than child mortality. [2]
- (b) Explain how the application of **two named** barriers to limit the spread of disease has reduced child mortality rates. [3+3]
- (c) Evaluate the relative importance of fair trade and food aid in overcoming food shortages in low-income countries. [10]

- (a) (i) Describe the changing poverty gap between Abidjan and smaller cities over time. [2]
- (ii) Suggest **one** reason why the poverty rate in Abidjan is always lower than the poverty rate in the smaller cities. [2]
- (b) Suggest **two** reasons for the occurrence of low-cost housing areas within cities. [3+3]
- (c) Evaluate the success of **one or more** strategies to control rapid city growth resulting from in-migration. [10]

(Option G continues on the following page)

End of Option F

(Option G continued)

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

Geography Higher level and standard level Paper 2 – resources booklet

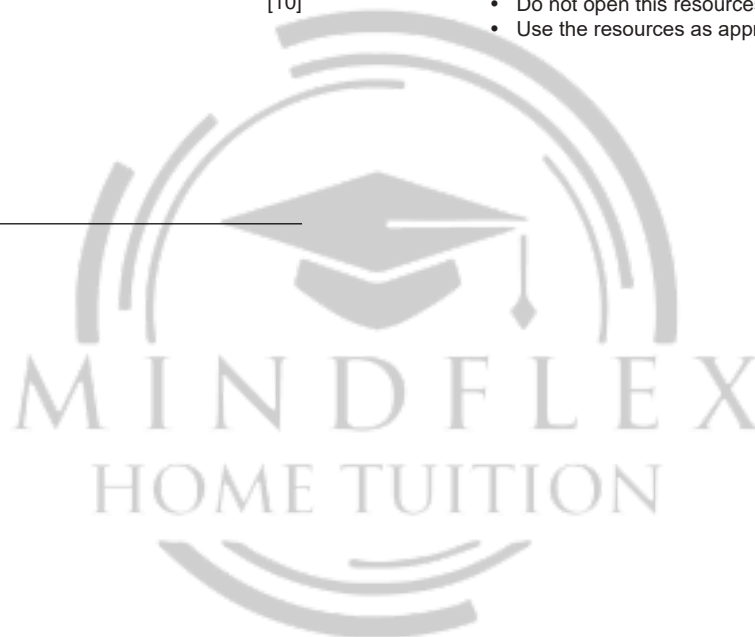
Wednesday 8 November 2017 (morning)

- The map shows temperatures for Dublin, Ireland, at 22:00 during a winter evening.
- (a) (i) Describe the pattern of temperatures shown south of the River Liffey. [3]
 - (ii) Estimate the temperature range north of the River Liffey. [1]
 - (b) Using examples, explain **two** reasons for the growth of suburbs. [3+3]
 - (c) Examine recent land use changes in the central and/or inner areas of **one or more** cities. [10]

Instructions to candidates

- Do not open this resources booklet until instructed to do so.
- Use the resources as appropriate to the questions in paper 2.

End of Option G



Option B — Oceans and their coastal margins

3. The map shows part of the North Atlantic sea floor.



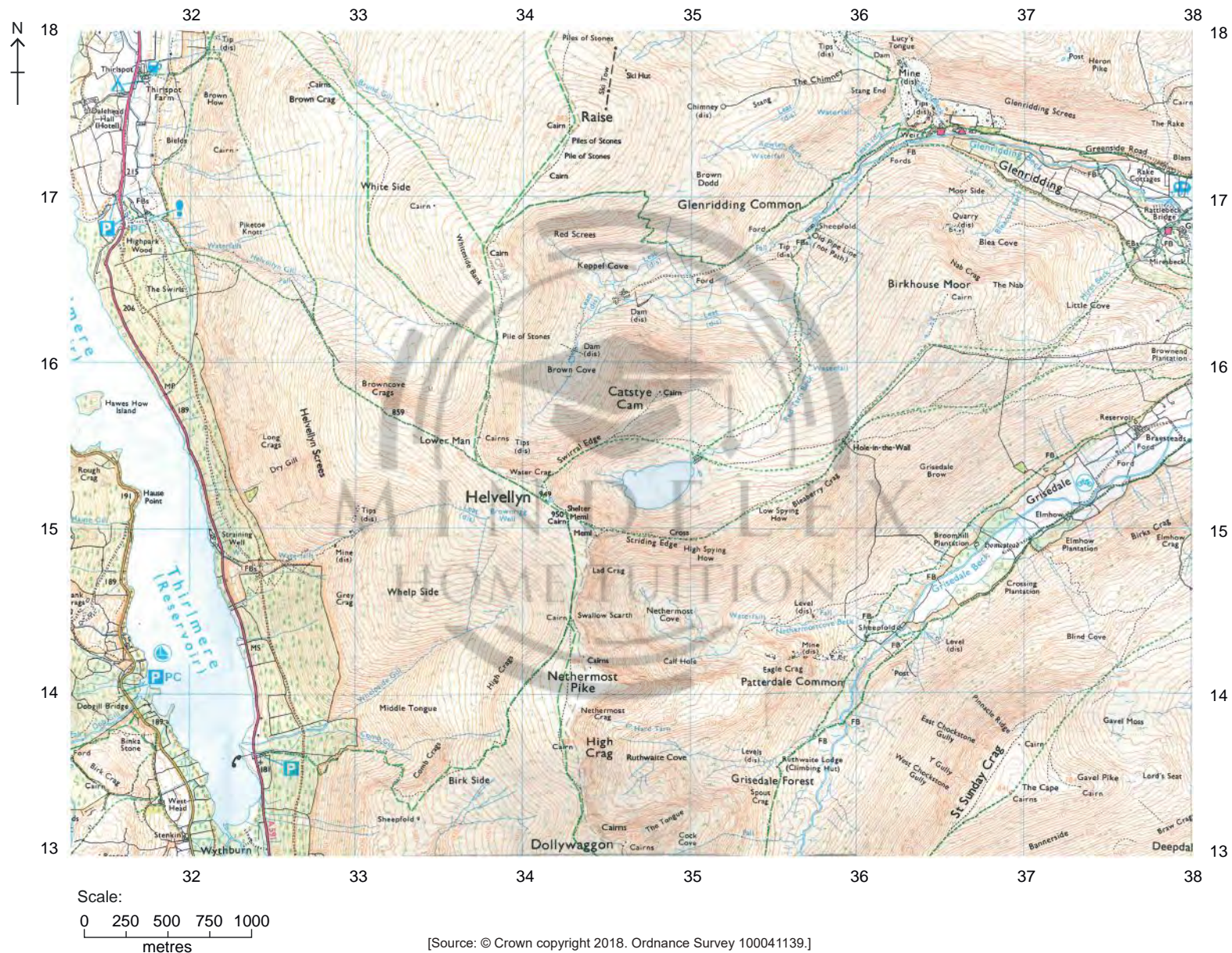
[Source: Heinrich Berann/National Geographic Creative]

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Option C — Extreme environments

5. The map extract shows a glaciated area of part of the Lake District in the north-west of England. The scale of the map is 1:25 000. The contour interval is 10 metres. The key for the map extract is on page 6.



Key:

ROADS AND PATHS

- A35** Dual carriageway
- A30** Main road
- B3074** Secondary road
- Road generally more than 4 m wide
- Road generally less than 4 m wide
- Other road, drive or track, fenced and unfenced
- Path
- Footpath
- Bridleway
- Triangulation pillar

VEGETATION Limits of vegetation are defined by positioning of symbols

- Coniferous trees
- Non-coniferous trees
- Coppice
- Scrub
- Bracken, heath or rough grassland
- Marsh, reeds or saltings
- Orchard

GENERAL FEATURES

- Gravel pit
- Sand pit
- Other pit or quarry
- Landfill site or slag/spoil heap
- Youth hostel
- Bunkhouse/camping barn/other hostel
- Electricity transmission line
- Slopes
- National park boundary
- Well; spring
- Viewpoint
- Picnic site
- Boat hire
- Mountain bike trail
- Walks/trails
- Public house/s
- Campsite/caravan site
- Telephone, public/roadside assistance/emergency
- Public convenience
- Information centre, all year/seasonal
- Parking / park & ride, all year/seasonal

HEIGHTS AND NATURAL FEATURES

52 - Ground survey height
284 - Air survey height

Surface heights are to the nearest metre above mean sea level. Where two heights are shown, the first is the height of the natural ground in the location of the triangulation pillar, and the second (in brackets) to a separate point which is the highest natural summit.

Vertical face/cliff

Contours may be at 5 or 10 metres vertical interval

Loose rock Boulders Outcrop Scree

Water Mud Sand; sand and shingle

Option G — Urban environments

14. The map shows temperatures for Dublin, Ireland, at 22:00 during a winter evening.

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