

**GCE A LEVEL****A110U20-1**

O21-A110U20-1

**TUESDAY, 12 OCTOBER 2021 – AFTERNOON****GEOGRAPHY – A level component 2**  
**Global Systems and Global Governance****2 hours**A110U201  
01**ADDITIONAL MATERIALS**

In addition to this examination paper, you will need **one** WJEC pink 16-page answer booklet and a calculator.

**INSTRUCTIONS TO CANDIDATES**

Answer questions 1 **and** 2 and **either** 3 **or** 4 in Section A.

Answer questions 5 **and** 6 and **either** 7 **or** 8 in Section B.

Answer **one** question in Section C.

Use black ink or black ball-point pen.

Write your answers in the separate answer booklet provided.

Write your name, centre number and candidate number in the spaces at the top of the answer booklet.

**INFORMATION FOR CANDIDATES**

The number of marks is given in brackets [ ] at the end of each question or part-question; you are advised to divide your time accordingly.

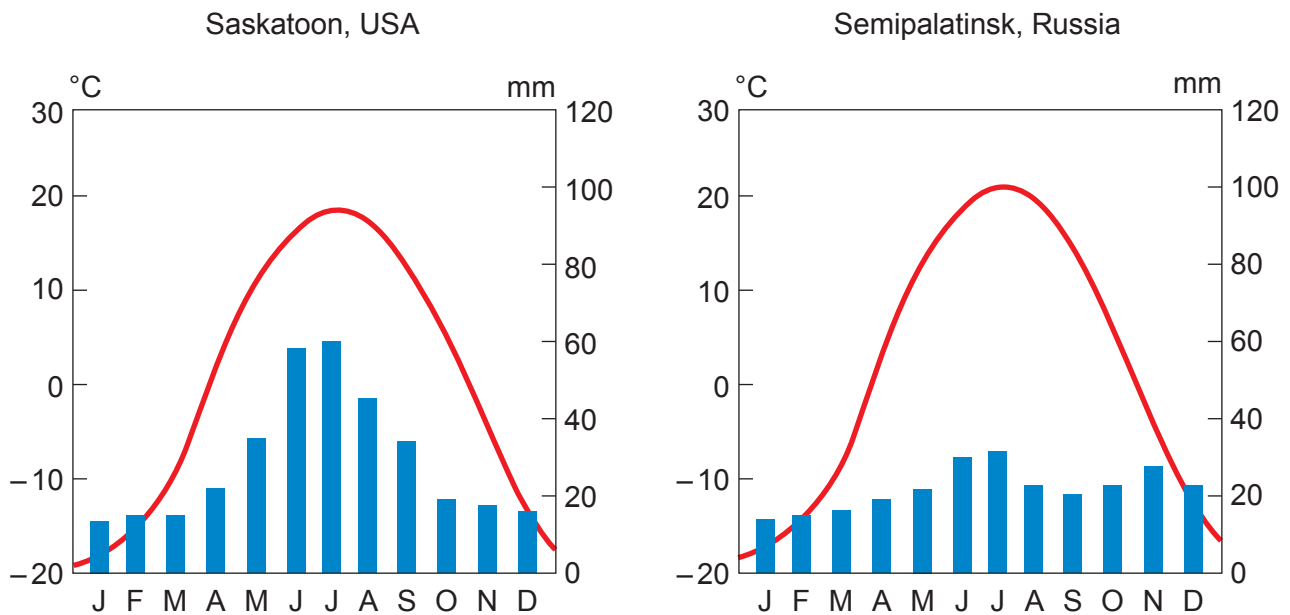
**This paper requires that you make as full use as possible of appropriate examples and reference to data to support your answers. Sketch maps and diagrams should be included where relevant.**

## Section A: Global Systems – Water and Carbon Cycles

Answer questions 1 and 2 and either 3 or 4.

Make the fullest possible use of examples in support of your answers.

**Figure 1: Climate graphs (showing mean monthly temperature and precipitation) for two temperate grassland regions in the northern hemisphere**



Source: <https://temperategrasslandsbiomes.weebly.com>

1. (a) Use **Figure 1** to compare seasonal variations in climate for the two grassland areas. [5]
- (b) Outline impacts of human activity on the relative size of carbon stores in the tropical rainforest biome. [5]

Figure 2: A table showing soil moisture conditions following a single long rainfall event at 24 fieldwork sites in a river catchment where rock type varies

Ch	Sa	Sa	C	Gr	Gr
Ch	Sa	Sa	C	C	Gr
Ch	Ch	Sa	Sa	C	Gr
Ch	Ch	C	C	Ch	Ch

**Key:**

**Rock type identified at each of the 24 sample sites:**

<b>Gr</b>	Granite	<b>Impermeable rock types</b>
<b>C</b>	Clay	
<b>Sa</b>	Sandstone	<b>Permeable rock types</b>
<b>Ch</b>	Chalk	

**Soil moisture condition following the rainfall event:**

**Saturated**

**Unsaturated**

2.

(a)

(i)

Use **Figure 2** to analyse how soil moisture condition varies for different rock types.

[4]

(ii)

State an appropriate statistical method to test for a relationship between rock type and soil moisture condition.

[1]

(b)

Suggest **two** reasons why soil saturation has occurred at some sites with a permeable rock type in **Figure 2**.

[5]

Either,

3.
- Discuss the interdependence of vegetation and soil within the water and carbon cycles.
- [20]

Or,

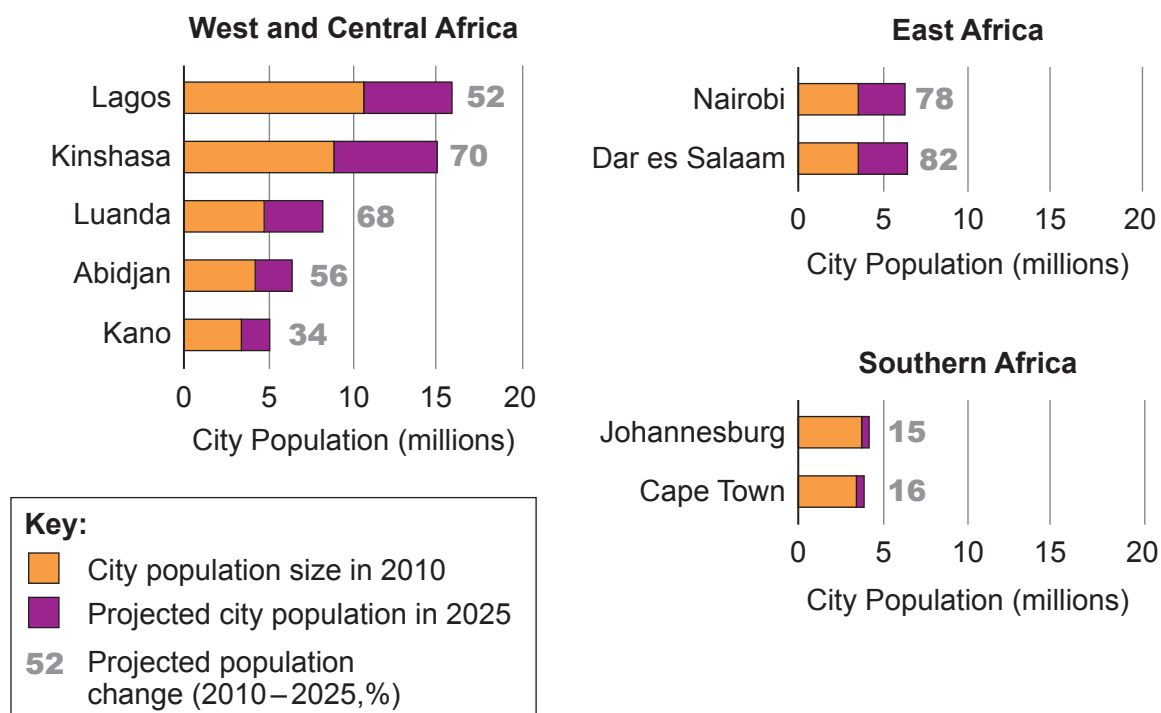
4.
- Discuss the varied effects of heavy precipitation on water and carbon stores at the local scale.
- [20]

## Section B: Global Governance – Change and Challenges

Answer questions 5 and 6 and either 7 or 8.

Make the fullest possible use of examples in support of your answers.

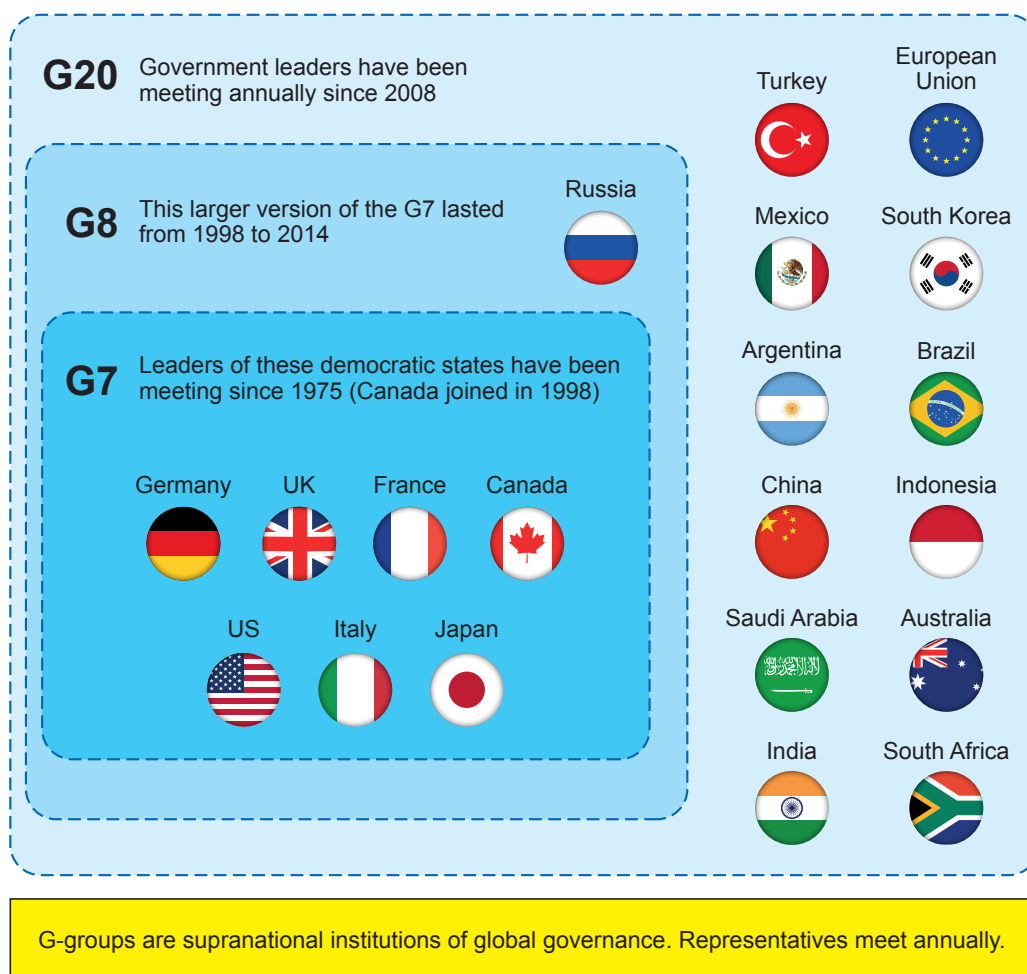
**Figure 3: Projected population change for selected African cities, 2010–2025**



Source: <http://www.blog.kpmgafrica.com>

5. (a) Analyse the pattern of population growth shown in **Figure 3**. [5]
- (b) Outline **one** social challenge and **one** economic benefit which rural-urban migration creates for large cities in developing countries. [5]

**Figure 4: Changes over time in the number and composition of different G-groups**



Adapted from: <http://www.boell.org/en/2016/11/30/g7-and-g20-global-governance-landscape>

6. (a) Use **Figure 4** to analyse the changes over time in G-group membership. [5]
- (b) Suggest why agreements promoting the sustainable use of Earth's oceans need the support of G20 countries. [5]

**Either,**

7. "Before the arrival of the internet, the world's countries and communities were far less connected than they are today."
- Evaluate this statement, referring to both migration and ocean governance in your answer. [20]

**Or,**

8. "Global governance has done nothing to tackle crises and injustices in those places where help is most needed."
- Evaluate this statement, referring to both migration and ocean governance in your answer. [20]

## Section C: 21st Century Challenges

Answer **either** question 9 or question 10.

*In your answer to either question 9 or 10, you should use **Figures 5, 6, 7 and 8** and apply your knowledge and understanding from across the whole specification.*

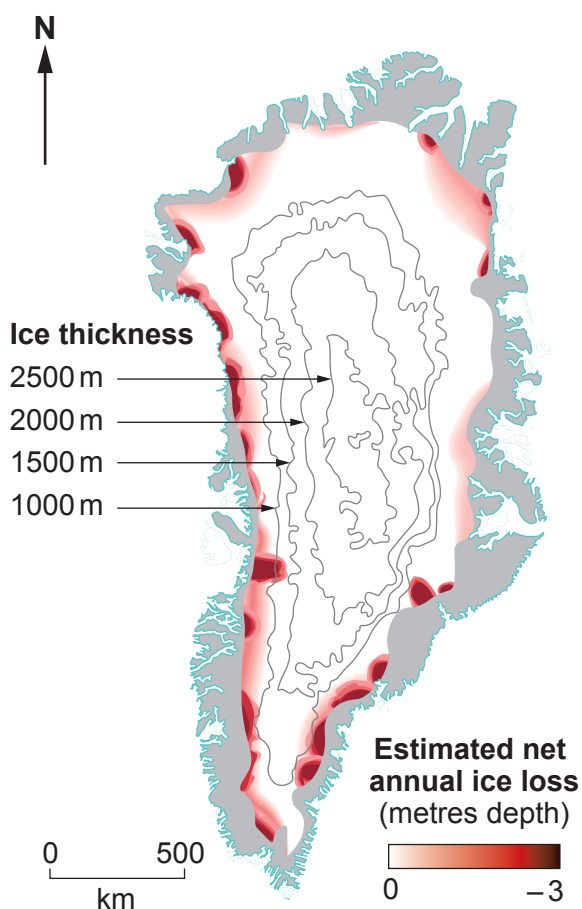
**Either,**

9. Discuss possible landscape changes affecting Greenland and other places as a result of the long-term melting of Greenland's ice. [30]

**Or,**

10. Discuss possible political and economic benefits the USA might gain from acquiring the territory of Greenland. [30]

**Figure 5: Greenland's shrinking ice cover**



**Figure 6: Flow diagram showing how physical and economic systems may be affected by the loss of Greenland's ice**

Greenland currently loses 200 billion tonnes of ice each year due to a warming climate.



The melting will become irreversible if there is a global temperature rise of 1.6°C compared with pre-industrial times.



Melting of the entire 2.9 million km<sup>3</sup> of ice stored by Greenland's ice sheet would lead to a global sea level rise of 6 or 7 metres.



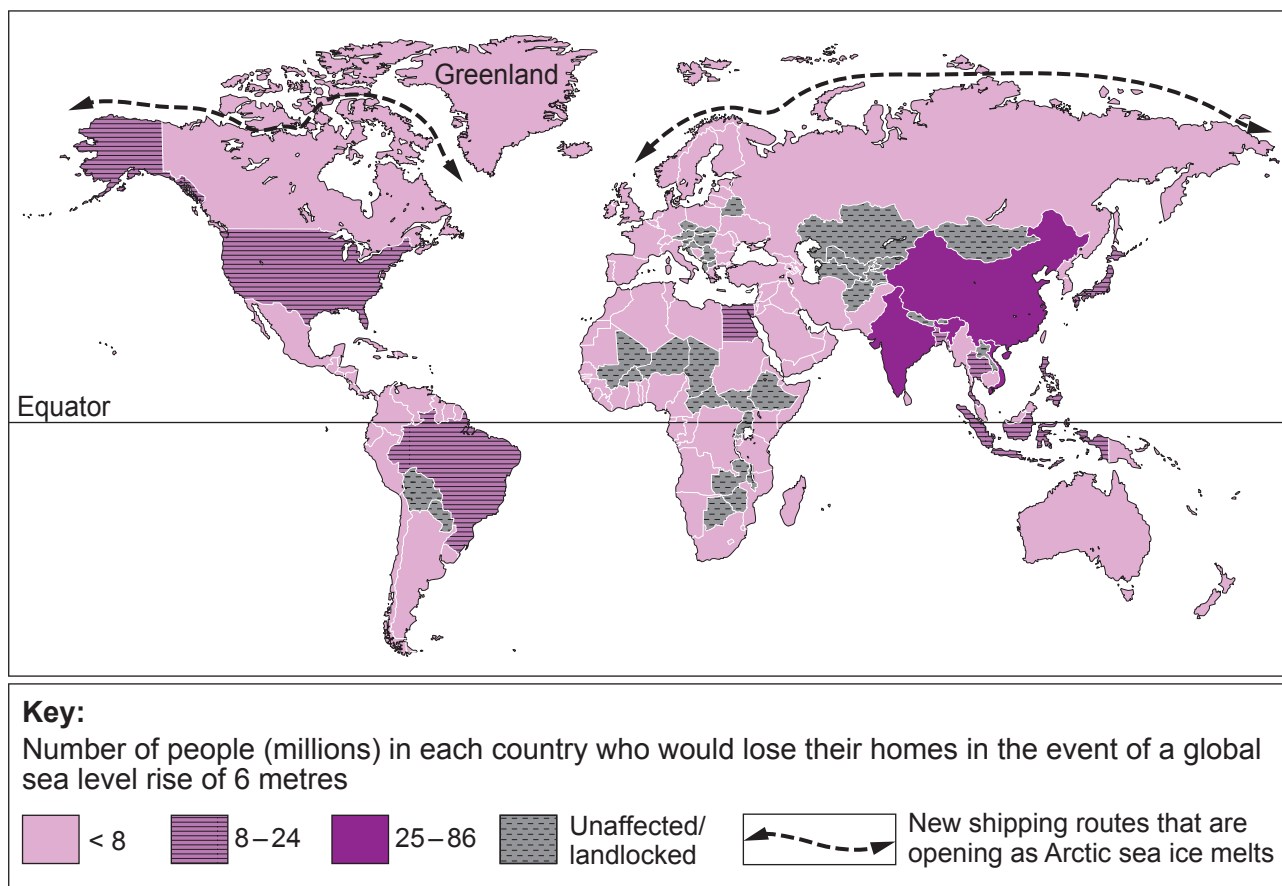
Opportunities for mining and agriculture in Greenland will increase as the temperature rises and the ice thins or disappears.



As the weight of the ice sheet is removed from the tectonic plate below, Greenland will slowly be uplifted.

Source: <https://www.sciencemag.org/news/2017/02/great-greenland-meltdown>

**Figure 7: Projected impacts of cryosphere melting on shipping routes and populations**



Source: <https://assets.climatecentral.org>

**Figure 8: A 2019 newspaper report**

# THE USA OFFERS TO BUY GREENLAND

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President Trump has said it would be “strategically nice” for the USA to buy Greenland from Denmark, likening the offer to a “large property deal”.

However, Denmark’s prime minister replied: “Greenland is not for sale”. As home to just 56,000 people, Greenland depends on the Danish government for national security. It is strategically significant because of its location between the Arctic and Atlantic oceans, as well as its potential onshore and offshore natural resources, including oil and gas.

Amid rising Chinese and Russian influence in the Arctic region, the Danes have submitted a claim for the North Pole that is solely based on their ownership of Greenland. But the US president’s offer to buy the island has revealed what geographer Klaus Dodds calls a “re-enchantment with the Arctic” by the USA. The USA previously sought to buy Greenland in 1867, 1910 and most recently in 1946.

Source: <https://www.ft.com>

**END OF PAPER**