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I declare this is my own work.

# GCSE GEOGRAPHY

## Paper 2 Challenges in the Human Environment

Friday 9 June 2023

Morning

Time allowed: 1 hour 30 minutes

### Materials

For this paper you must have:

- the OS map key insert (enclosed)
- a pencil
- a rubber
- a ruler.

You may use a calculator.

### Instructions

- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.

**Answer all questions in Section A and Section B.  
Answer Question 3 and one other question in Section C.**

- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- If you need additional extra space for your answer(s), use the lined pages at the end of this book. Write the question number against your answer(s).
- Do all rough work in this book. Cross through any work you do not want to be marked.

### Information

- The marks for questions are shown in brackets.
- The total number of marks available for this paper is 88.
- Spelling, punctuation, grammar and specialist terminology will be assessed in Question **01.11**.
- HIC is a higher income country.
- LIC is a lower income country.
- NEE is a newly emerging economy.

| For Examiner's Use |      |
|--------------------|------|
| Question           | Mark |
| 1                  |      |
| 2                  |      |
| 3                  |      |
| 4                  |      |
| 5                  |      |
| 6                  |      |
| <b>TOTAL</b>       |      |



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For the multiple-choice questions, shade the circle next to the correct answer.

CORRECT METHOD 

WRONG METHODS    

If you want to change your answer you must cross out your original answer as shown. 

If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown. 

## Section A Urban issues and challenges

Answer **all** questions in this section.

### Question 1 Urban issues and challenges

**0 1 . 1** Give **one** reason for the growth of megacities in LIC/NEEs.

[1 mark]

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Study **Figure 1**, a table showing the projected population of the world's ten largest cities in 2030.

**Figure 1**

| City                                       | Projected population in 2030 (millions) |
|--------------------------------------------|-----------------------------------------|
| Delhi, India                               | 38.9                                    |
| Tokyo, Japan                               | 36.6                                    |
| Shanghai, China                            | 32.9                                    |
| Dhaka, Bangladesh                          | 28.0                                    |
| Al-Qahirah (Cairo), Egypt                  | 25.5                                    |
| Mumbai (Bombay), India                     | 24.6                                    |
| Beijing, China                             | 24.3                                    |
| Mexico City, Mexico                        | 24.1                                    |
| Sao Paulo, Brazil                          | 23.8                                    |
| Kinshasa, Democratic Republic of the Congo | 21.9                                    |

**0 1 . 2** Calculate the mean size of the cities shown in **Figure 1**.

Answer to **one** decimal place.

**[2 marks]**

Show your working

Answer \_\_\_\_\_ millions

**Question 1 continues on the next page**

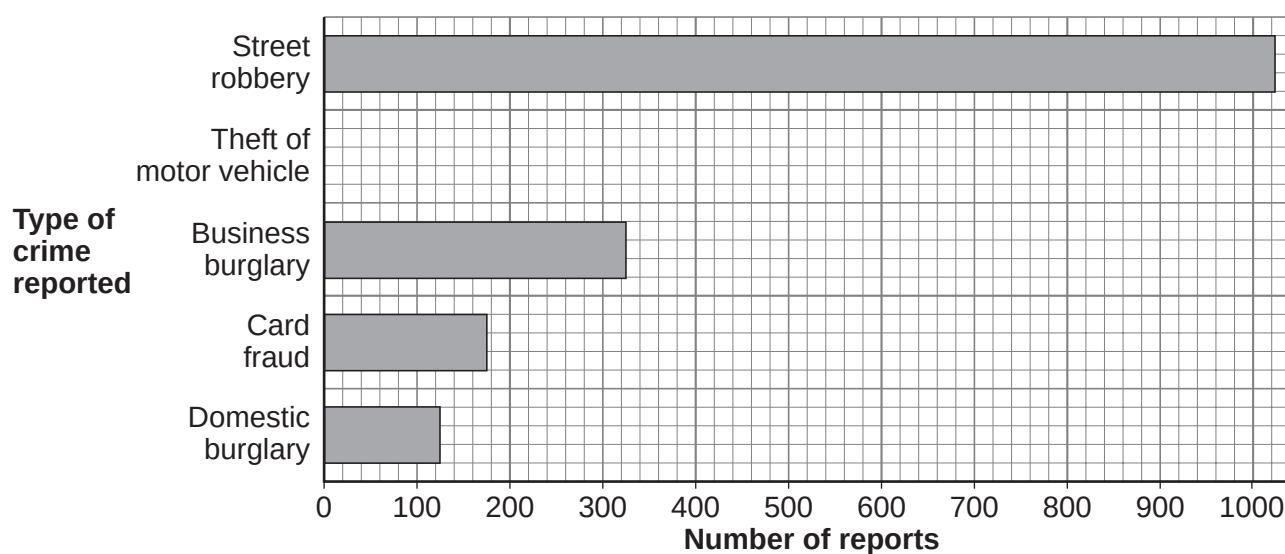
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Study **Figure 2**, a graph showing selected crimes reported on Twitter in Mexico City, a city in a NEE, September 2016–April 2017.

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**Figure 2**



**0 1 . 3** Complete **Figure 2** using the following data.

[1 mark]

| Crime                  | Number of reports<br>Sept 2016 – Apr 2017 |
|------------------------|-------------------------------------------|
| Theft of motor vehicle | 350                                       |

**0 1 . 4** Approximately how much more frequent is street robbery than business burglary?

Shade **one** circle only.

[1 mark]

- A** 2 times ☐
- B** 3 times ☐
- C** 4 times ☐
- D** 5 times ☐



**0 1 . 5** Outline **one** reason why reducing crime is a challenge in some LIC/NEE cities.

**[2 marks]**

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Study **Figure 3**, a photograph of a street class run by volunteers in Mexico City.

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**Figure 3**



**0 1 . 6** To what extent has urban growth created social opportunities?

Use **Figure 3** and a LIC/NEE example you have studied.

**[6 marks]**

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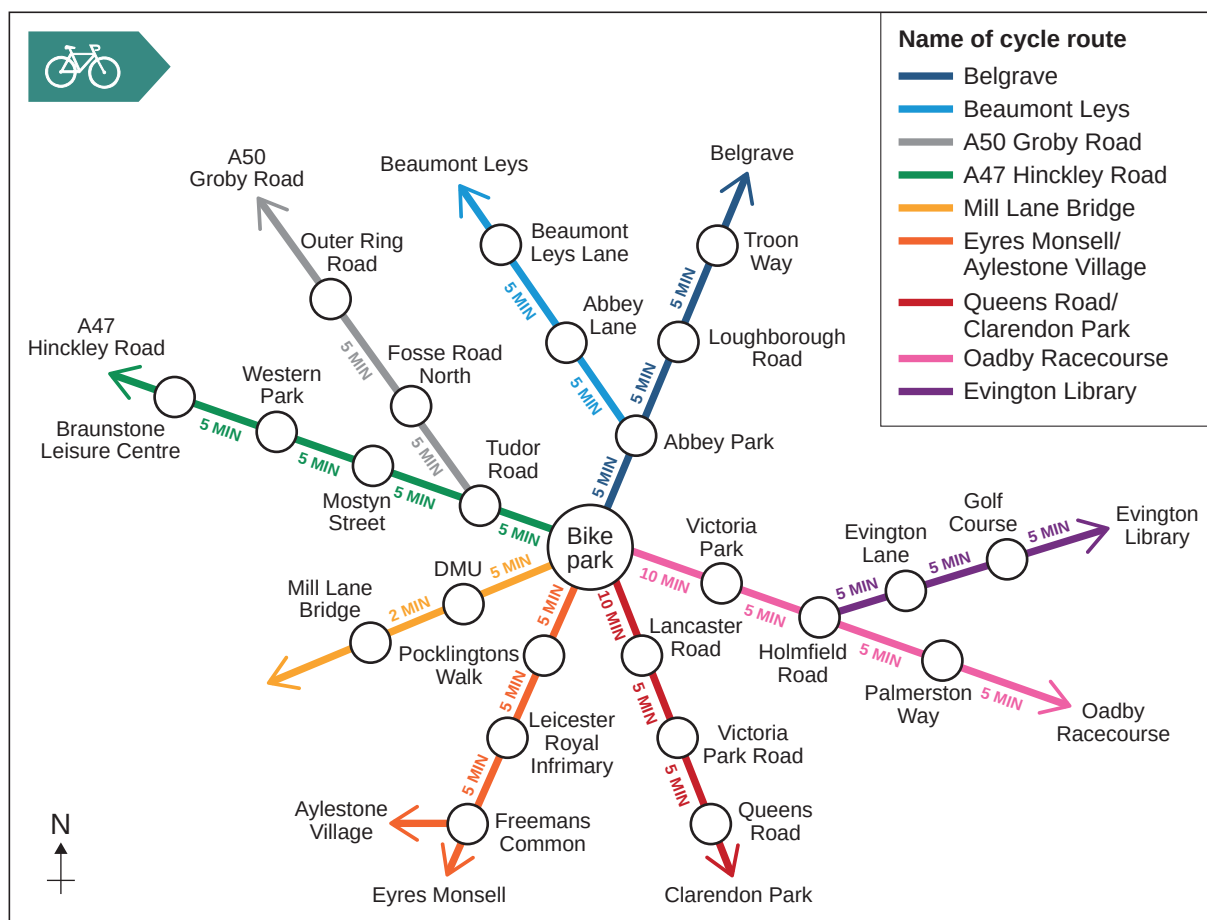
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Study **Figure 4**, a map of Leicester's cycle routes in 2020.

**Figure 4**



**0 1 . 7** Which route would you use to travel south west from the bike park?

Shade **one** circle only.

**[1 mark]**

**A** A47 Hinckley Road

☐

**B** A50 Groby Road

☐

**C** Mill Lane Bridge

☐

**D** Oadby Racecourse

☐

**0 1 . 8** How long would it take to cycle from the bike park to Evington Library?

**[1 mark]**

\_\_\_\_\_ minutes





**0 1 . 9** Suggest how urban transport strategies can be used to reduce traffic congestion.

Use **Figure 4** and your own understanding.

**[4 marks]**

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**0 1 . 1 0** Outline **one** way in which a UK city you have studied is important in the UK.

**[2 marks]**

Name of UK city \_\_\_\_\_

Importance \_\_\_\_\_

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**End of Section A**  
**Turn over for Section B**

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## Section B The changing economic world

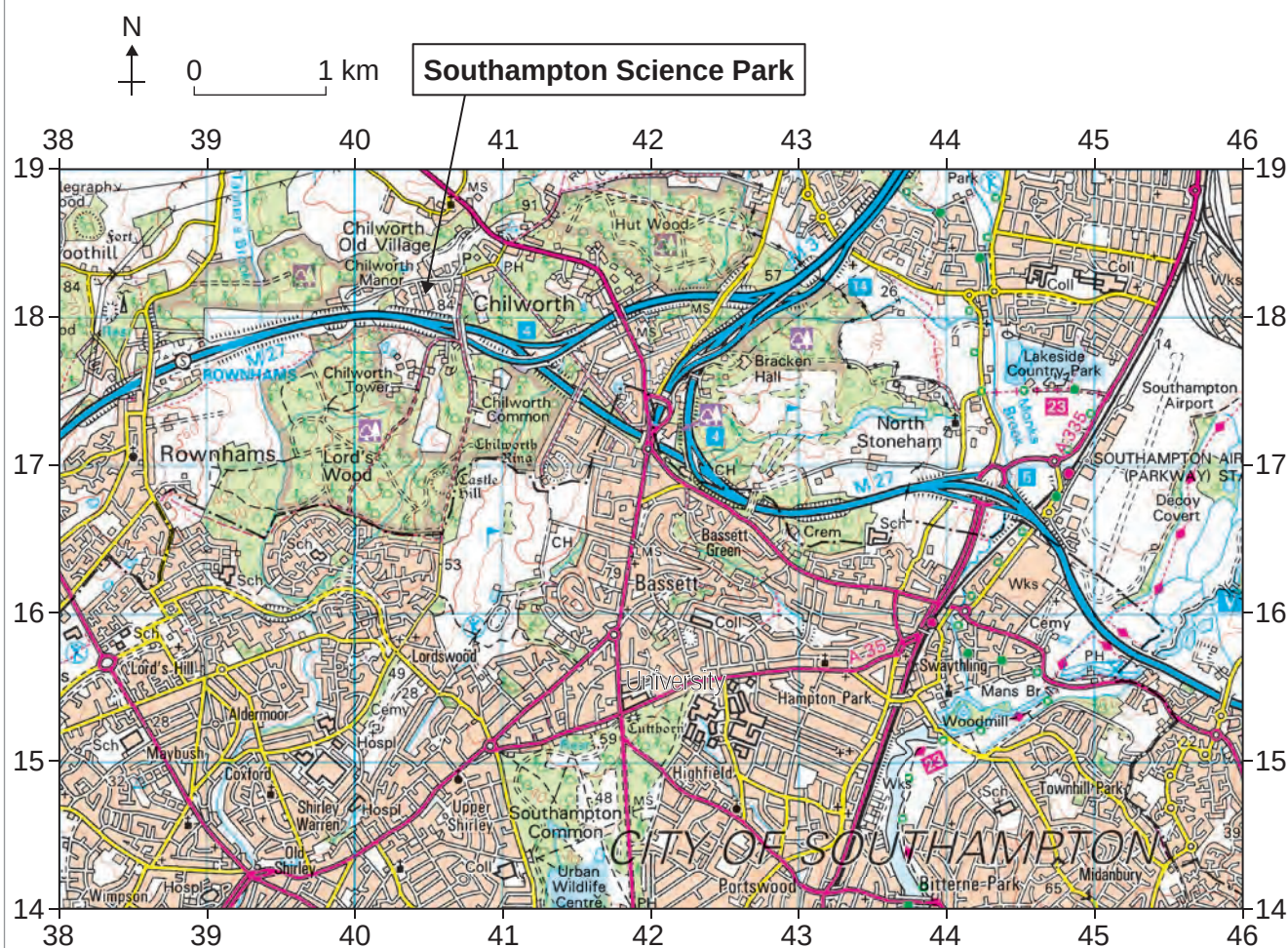
Answer **all** questions in this section.

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### Question 2 The changing economic world

Study **Figure 5**, a 1:50 000 Ordnance Survey map of an area of Southampton, a city in the UK.

**Figure 5**



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02.1

Using **Figure 5**, give the direction from the Southampton Science Park in grid square 4018 to the university in grid square 4215.

Shade **one** circle only.

[1 mark]

- A North East

☐
- B North West

☐
- C South East

☐
- D South West

☐

02.2

Using **Figure 5**, complete the table to give **two** pieces of map evidence showing why the site in grid square 4018 is a good location for the science park.

An example has been completed for you.

[2 marks]

| Evidence        | Grid square |
|-----------------|-------------|
| Near university | 4215        |
|                 |             |
|                 |             |

Question 2 continues on the next page

Turn over ►





Study **Figure 6**, information about the Southampton Science Park.

**Figure 6**

Provides high-quality office, laboratory and meeting facilities in a healthy and inspiring environment.

72 acres of green space, lakes, walking routes and picnic spots.

27 acres are a protected conservation area.

Committed to minimising waste and making buildings more energy efficient.



**0 2 • 3** To what extent are modern industrial developments environmentally sustainable?

Use **Figure 6** and your own understanding.

**[6 marks]**

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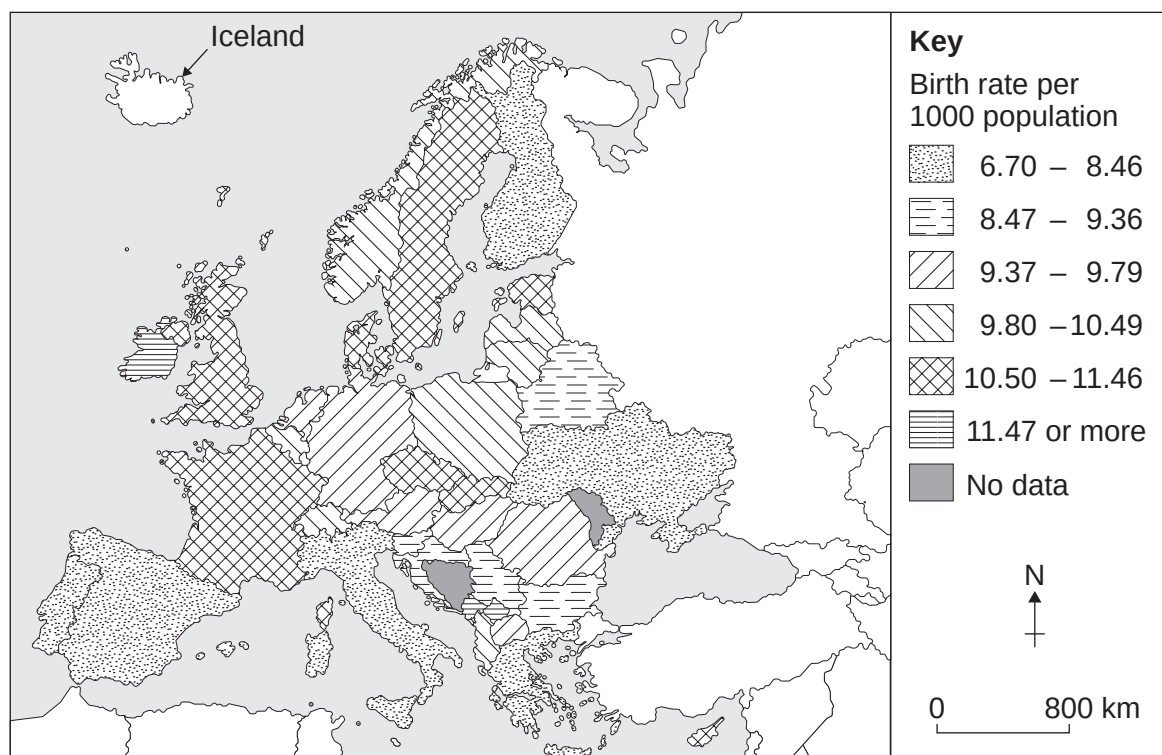
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Study **Figure 7**, a map showing birth rates in Europe (excluding Russia) in 2019.

**Figure 7**



**0 2 . 4** Complete **Figure 7** using the following data.

[1 mark]

| Country | Birth rate |
|---------|------------|
| Iceland | 12.3       |





**0 2 . 5** Outline **one** disadvantage of using birth rates as a measure of development. **[2 marks]**

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**0 2 . 6** Which measure of development combines income, life expectancy and education levels?

Shade **one** circle only.

**[1 mark]**

- A** Gross National Income (GNI) per head ☐
- B** Human Development Index (HDI) ☐
- C** Infant mortality rate (IMR) ☐
- D** People per doctor ☐

**0 2 . 7** Outline **one** physical cause of uneven development. **[2 marks]**

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Study **Figure 8**, a table showing the debt of selected countries in 2019.

**Figure 8**

| Country      | Total debt<br>(millions US\$) |
|--------------|-------------------------------|
| Brazil       | 569 398                       |
| India        | 560 035                       |
| South Africa | 188 102                       |
| Egypt        | 115 080                       |
| Peru         | 64 204                        |
| Bangladesh   | 57 088                        |
| Jordan       | 33 683                        |

**0 2 . 8** Calculate the interquartile range for the data in **Figure 8**.

**[2 marks]**

Show your working

Answer: interquartile range \_\_\_\_\_



Study **Figure 9**, information from a report on debt.

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**Figure 9**

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third-party copyright restrictions**

**0 2 . 9** Suggest how debt relief can help reduce the development gap.

Use **Figure 9** and your own understanding.

**[4 marks]**

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**End of Section B**  
**Turn over for Section C**

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### Section C The challenge of resource management

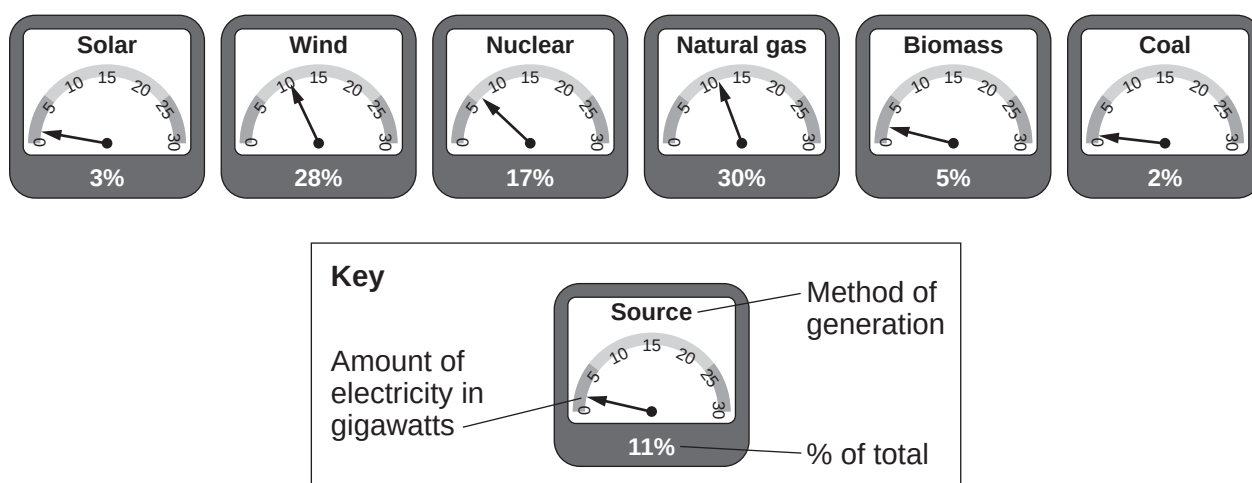
Answer **Question 3** and

**either** Question 4 (Food) **or** Question 5 (Water) **or** Question 6 (Energy).

#### Question 3 The challenge of resource management

Study **Figure 10**, information showing the major sources of the UK's electricity at 3.20 pm on 27 October 2020.

**Figure 10**



**0 3 . 1** What is solar energy?

**[1 mark]**

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- 0 3 . 2** Suggest how the energy mix used to generate the UK's electricity has changed in the last 30 years.

Use **Figure 10** and your own understanding.

**[2 marks]**

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- 0 3 . 3** Explain why demand for different energy sources has changed in the UK.

**[3 marks]**

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**Question 3 continues on the next page**

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Study **Figure 11a** and **Figure 11b**.

**Figure 11a** is a cartoon about sources of food in the UK.

**Figure 11b** is a pie chart showing carbon emissions from stages of the food supply chain.

**Figure 11a**



**Figure 11b**

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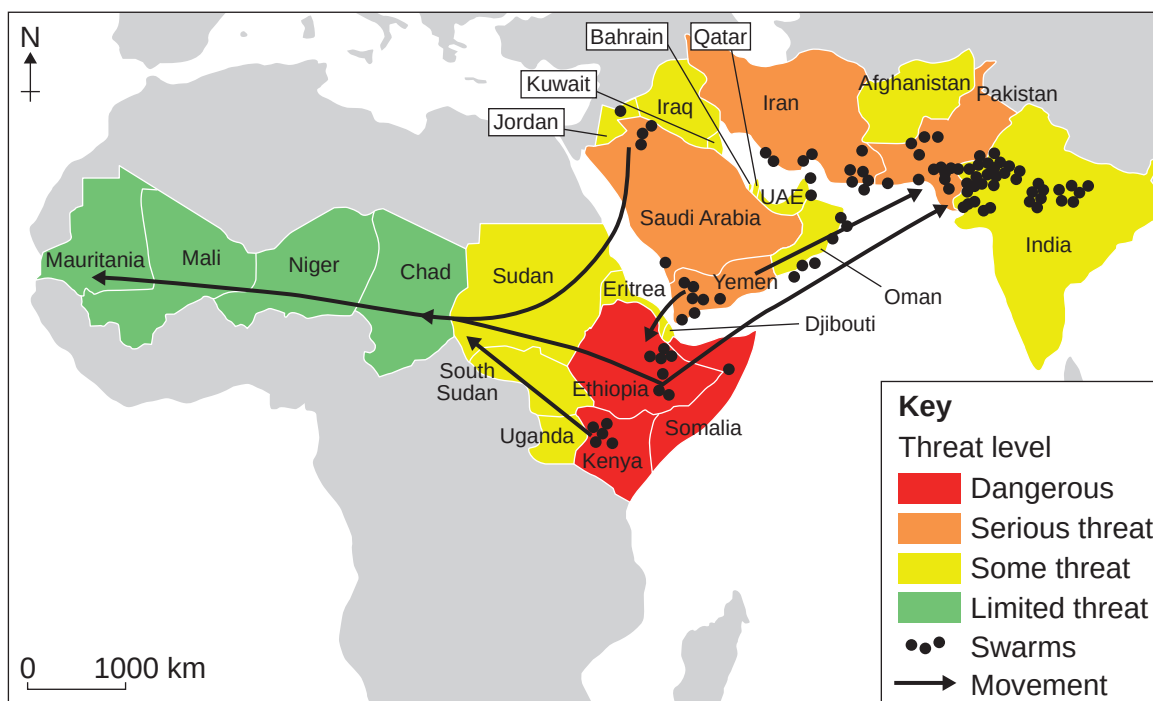


Answer **either** Question 4 (Food) **or** Question 5 (Water) **or** Question 6 (Energy).

### Question 4 Food

Study **Figure 12**, a map of parts of Africa, Asia and the Middle East. The map shows the locust forecast for May–July 2020.

**Figure 12**



**0 4 . 1** How many of the countries shown in **Figure 12** had a serious threat level?

Shade **one** circle only.

- A** 3 ☐
- B** 4 ☐
- C** 5 ☐
- D** 6 ☐

What percentage of the 25 countries shown had a serious threat level?

**[2 marks]**



**0 4 . 2** Describe the pattern of the threat from locusts shown in **Figure 12**.

**[2 marks]**

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**0 4 . 3** What is food insecurity?

**[1 mark]**

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**Question 4 continues on the next page**

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**0 4 . 4** Explain how pests and diseases can affect food supply.

**[2 marks]**

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Study **Figure 13**, information about appropriate technology being used to improve farming in parts of Africa.

**Figure 13**



Zaï is a farming technique used in the western Sahel region (Burkina Faso, Niger, Mali). It uses holes dug in the soil during the dry season to catch water and concentrate compost.

This is an old technique updated by filling the holes with manure and compost to provide plant nutrients. The manure attracts termites, whose tunnels help break up the soil. Zaï holes improve the yields of trees, sorghum and millet by up to 500 per cent.







- 0 5 . 1** How many of the African countries shown in **Figure 14** had a high risk of water insecurity in 2019?

Shade **one** circle only.

**A** 8

☐

**B** 9

☐

**C** 10

☐

**D** 11

☐

What percentage of the 48 countries in Africa shown had a high risk of water insecurity in 2019?

Answer to **one** decimal place.

[2 marks]

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- 0 5 . 2** Describe the distribution of countries which had a very low risk of water insecurity shown in **Figure 14**.

[2 marks]

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- 0 5 . 3** What is water insecurity?

[1 mark]

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Question 5 continues on the next page

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**0 5 . 4** Explain how limited infrastructure can affect water supply.

**[2 marks]**

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Study **Figure 15a**, a photograph of a desalination plant in Dubai and **Figure 15b**, information about the costs of desalination.

**Figure 15a**



**Figure 15b**

| Water source          | Cost (US\$) per acre foot* |
|-----------------------|----------------------------|
| Groundwater           | 90–160                     |
| Treating wastewater   | 1600–1700                  |
| Seawater desalination | 2200–4300                  |

\*The amount of water needed to cover an acre (approximately a football pitch) in water 1 foot (30 cm) deep.

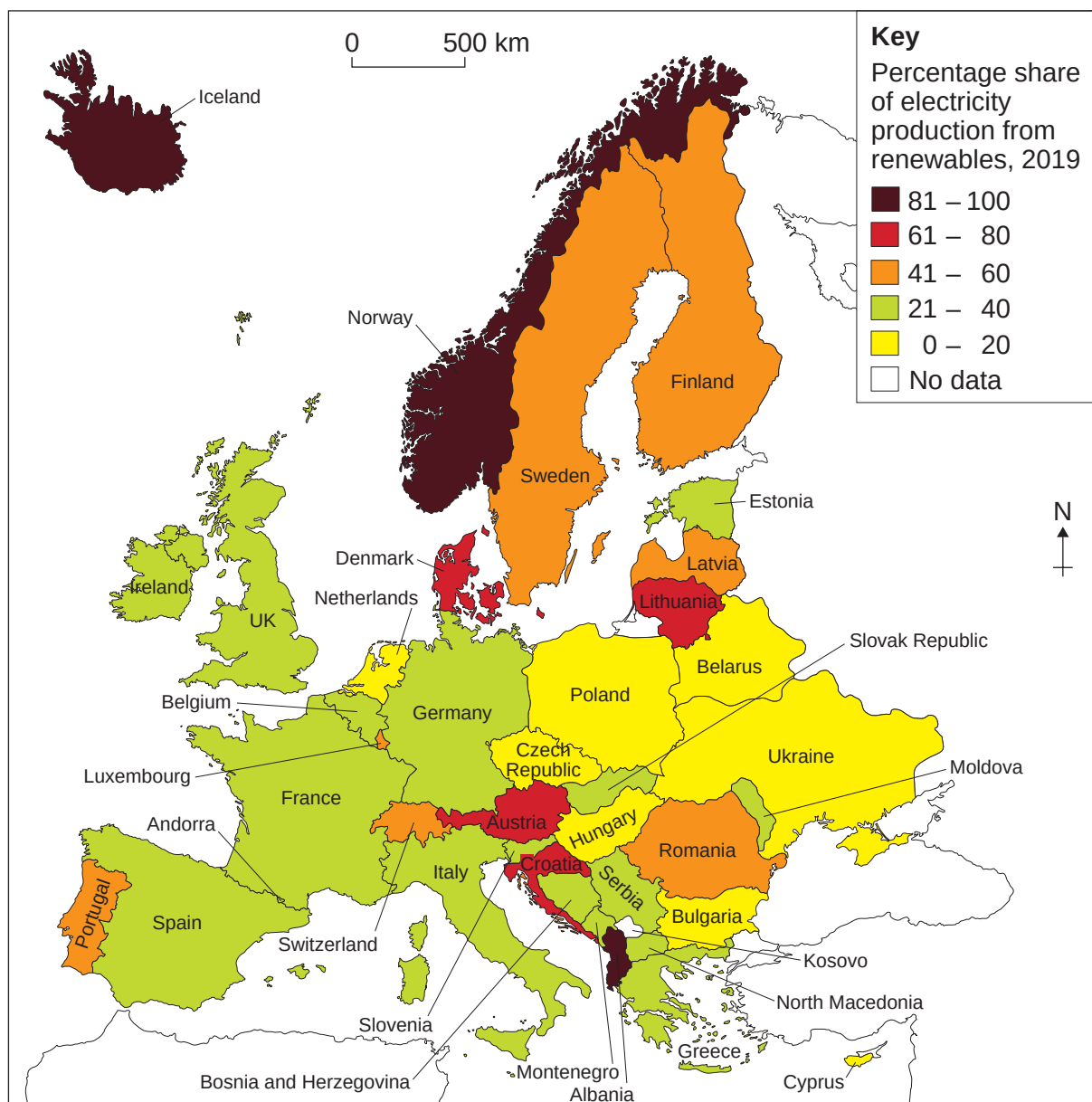






**Question 6 Energy**

Study **Figure 16**, a map of Europe (excluding Russia) showing the percentage of electricity produced from renewable sources in 2019.

**Figure 16**

- 0 6 . 1** How many of the countries shown in **Figure 16** produced 41–60% of their electricity from renewable sources in 2019?

Shade **one** circle only.

**A** 6

☐

**B** 7

☐

**C** 8

☐

**D** 9

☐

What percentage of the 41 countries in Europe for which data is shown produced 41–60% of their electricity from renewable sources in 2019?

Answer to **one** decimal place.

[2 marks]

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- 0 6 . 2** Describe the distribution of countries which produced 0–20% of their electricity from renewable sources in 2019.

[2 marks]

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- 0 6 . 3** What is energy insecurity?

[1 mark]

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Question 6 continues on the next page

Turn over ►



0 6 . 4

Explain how political factors can affect energy supply.

[2 mark]

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Study **Figure 17**, information about some renewable energy sources in the UK.**Figure 17**

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