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I declare this is my own work.

# A-level GEOGRAPHY

## Paper 1 Physical Geography

Wednesday 17 May 2023

Morning

Time allowed: 2 hours 30 minutes

### Materials

For this paper you must have:

- the colour 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.
- Answer **either** Question 2 **or** Question 3 **or** Question 4 in Section B.
- Answer **either** Question 5 **or** Question 6 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 120.

For Examiner's Use	
Section	Mark
A	
B	
C	
<b>TOTAL</b>	



J U N 2 3 7 0 3 7 1 0 1

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**Section A**

**Water and carbon cycles**

Answer **all** questions in this section.

**0 1 . 1**

Outline the purpose of a flood hydrograph.

**[4 marks]**

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**Section B**

Answer **one** question in this section.

Answer **either** Question 2 **or** Question 3 **or** Question 4.

**Question 2 Hot desert systems and landscapes**

**0 2 . 1** Outline weathering processes in hot deserts.

**[4 marks]**

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**Figure 3** shows the changing size of the Sahara Desert between 1980 and 1990. A standard deviation calculation has been started.

**Figure 3**

Year	Area (millions of km <sup>2</sup> ) $x$	$x - \bar{x}$	$(x - \bar{x})^2$
1980	8.6	-0.609	0.371
1981	8.9	-0.309	0.095
1982	9.25	0.041	0.002
1983	9.4	0.191	0.036
1984	10.0		
1985	9.25	0.041	0.002
1986	9.1	-0.109	0.012
1987	9.4	0.191	0.036
1988	8.9	-0.309	0.095
1989	9.2	-0.009	0.000
1990	9.3	0.091	0.008
$\sum x = 101.3$		$\sum (x - \bar{x})^2 = 1.283$	
$\bar{x} = 9.209$			

**Key**

$x$  = area of Sahara Desert  
 $\bar{x}$  = mean  
 $\sum$  = sum of  
 $\sigma$  = standard deviation  
 $n$  = number in sample

Standard deviation formula

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Space for working

$\sigma =$













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**Question 3 Coastal systems and landscapes**

**0 3 . 1** Outline processes of mass movement at the coastline.

**[4 marks]**

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**Figure 5** shows the variation in tidal ranges at various locations across the British Isles. A standard deviation calculation has been started.

**Figure 5**

Location	Difference between high and low tide (m) $x$	$x - \bar{x}$	$(x - \bar{x})^2$
Plymouth	4.7	-0.808	0.653
Southampton	4.0	-1.508	2.274
Dover	5.9	0.392	0.154
Aberdeen	3.7	-1.808	3.269
Liverpool	8.4		
Avonmouth	12.3	6.792	46.131
Belfast	3.1	-2.408	5.798
Derry / Londonderry	2.2	-3.308	10.943
St Helier	9.8	4.292	18.421
Swansea	8.4	2.892	8.364
Lowestoft	1.9	-3.608	13.018
Lerwick	1.7	-3.808	14.501
	$\sum x = 66.1$		$\sum (x - \bar{x})^2 = 131.890$
	$\bar{x} = 5.508$		

**Key**

$x$  = tidal range

$\bar{x}$  = mean

$\sum$  = sum of

$\sigma$  = standard deviation

$n$  = number in sample

Standard deviation formula

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Space for working

$\sigma =$













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**Question 4    Glacial systems and landscapes**

**0 4 . 1** Outline the processes by which ice moves within a glacier.

**[4 marks]**

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**Figure 7** shows the minimum extent of Arctic ice between 2002 and 2015. A standard deviation calculation has been started.

**Figure 7**

Year	Minimum extent (millions of km <sup>2</sup> ) $x$	$x - \bar{x}$	$(x - \bar{x})^2$
2002	5.95	0.779	0.607
2003	6.13	0.959	0.920
2004	6.04	0.869	0.755
2005	5.56	0.389	0.151
2006	5.91	0.739	0.546
2007	4.29		
2008	4.72	-0.451	0.203
2009	5.38	0.209	0.044
2010	4.92	-0.251	0.063
2011	4.61	-0.561	0.315
2012	3.62	-1.551	2.406
2013	5.35	0.179	0.032
2014	5.28	0.109	0.012
2015	4.63	-0.541	0.293
	$\sum x = 72.39$		$\sum (x - \bar{x})^2 = 7.123$
	$\bar{x} = 5.171$		

**Key**

$x$  = minimum extent  
 $\bar{x}$  = mean  
 $\sum$  = sum of  
 $\sigma$  = standard deviation  
 $n$  = number in sample

Standard deviation formula

$$\sigma = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

Space for working

$\sigma =$













**Section C**

Answer **one** question in this section.

Answer **either** Question 5 **or** Question 6.

**Question 5 Hazards**

**0 5 . 1** Outline the concept of mitigation in relation to the management of hazards.

**[4 marks]**

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0 5 . 5

With reference to a hazardous location at a local scale, assess the importance of the physical processes and factors which have contributed to the scale and nature of the hazard.

**[20 marks]**

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**Question 6 Ecosystems under stress**

**0 6 . 1** Outline the concept of net primary production.

**[4 marks]**

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0 6 . 5

How far do you agree that the development pressures facing savanna grassland are more extreme than those facing tropical rainforest?

**[20 marks]**

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