

Please write clearly in block capitals.

Centre number

--	--	--	--	--

Candidate number

--	--	--	--

Surname

Forename(s)

Candidate signature

A-level GEOGRAPHY

Paper 1 Physical geography

Monday 4 June 2018

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.
- 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	
TOTAL	

There are no questions printed on this page

*Do not write
outside the
box*

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Section A

Water and carbon cycles

Answer **all** questions in this section.

Do not write
outside the
box

0 1 . 1

Explain the role of cryospheric change in the water cycle.

[4 marks]

Question 1 continues on the next page

Find Personal Tutor from www.wisesprout.co.uk

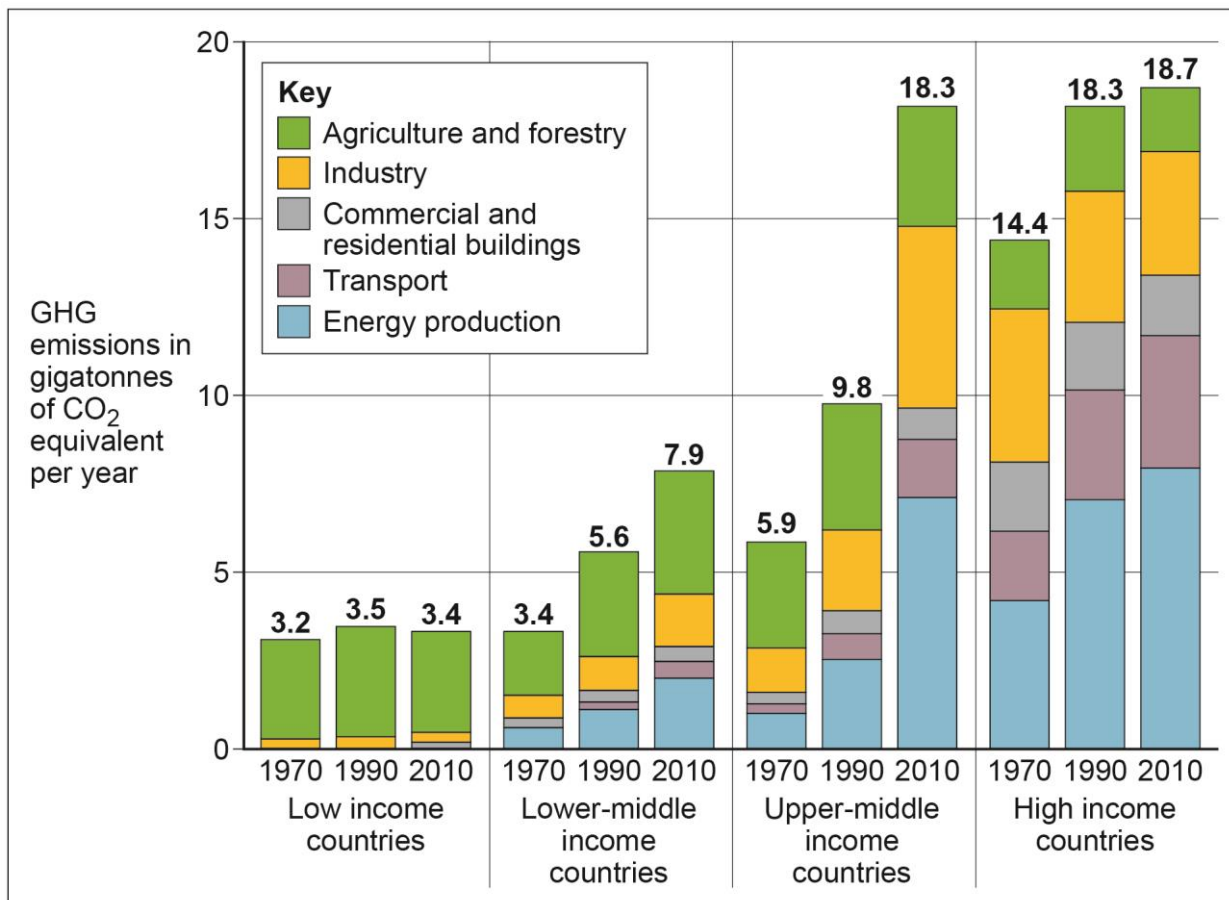
找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Figure 1 shows change in greenhouse gas (GHG) emissions, grouped by relative wealth of country, between 1970 and 2010.

Do not write
outside the
box

Figure 1



Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Assess the potential causes and impacts of changes to the water balance within a tropical rainforest that you have studied.

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Section B

Answer **one** question in this section.

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

Do not write
outside the
box

Question 2 Hot desert systems and landscapes

0 2 . 1

Outline the role of atmospheric processes in causing aridity in desert regions.

[4 marks]

Question 2 continues on the next page

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Figure 4 shows a landscape in the Gobi Desert near Yumenguan, China.

Figure 4



Note: This landscape features river and lake sand and mud beds (primarily silt, sand, clay and some gravel) which were formed, but not completely consolidated, towards the end of the last ice age.

0 2 . 3

Using **Figure 4** and your own knowledge, assess the view that wind is the most important factor in the development of this landscape.

[6 marks]

Question 2 continues on the next page

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk 找名校导师，用小草线上辅导（微信小程序同名）

'Climate change is on course to radically alter the role of water in deserts and their margins, affecting both human populations and the physical landscape.'

To what extent do you agree with this view?

[20 marks]

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk 找名校导师，用小草线上辅导（微信小程序同名）

Question 3 Coastal systems and landscapes**0 3 . 1**

Outline the processes which lead to the development of barrier beaches.

[4 marks]

Figure 5, on the insert, is an image of the coast in the vicinity of Chabahar Bay, Iran. The image focuses on the movement of sediment in this area.

0 3 . 2Analyse the data shown in **Figure 5**.**[6 marks]**

Question 3 continues on the next page**Turn over ►**

Figure 6a indicates sea levels relative to land 20 000 years before present. The present day coastline is indicated for comparative purposes.
Figure 6b indicates present day sea levels.

Figure 6a

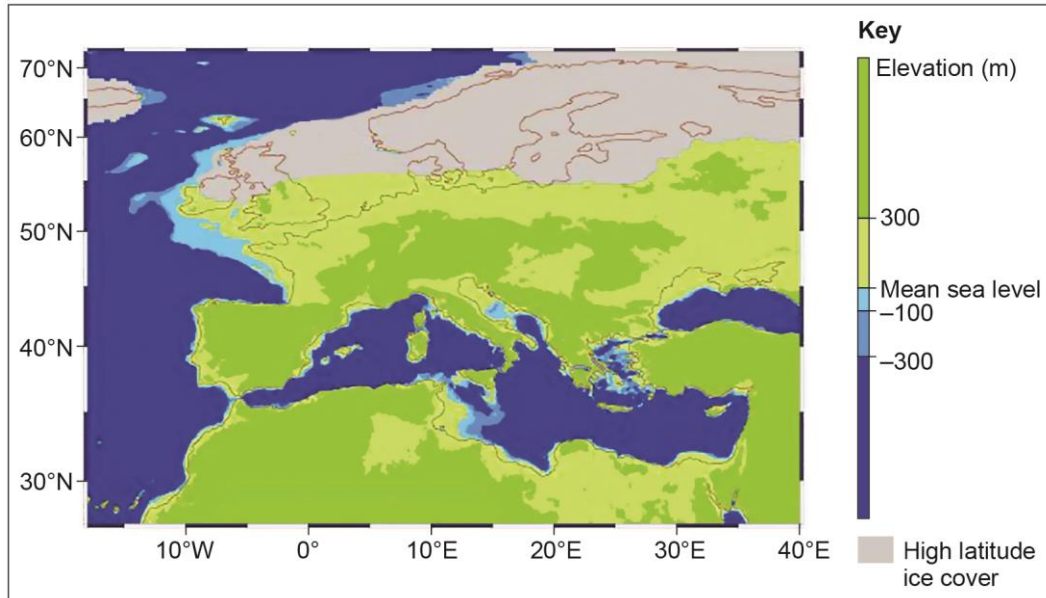
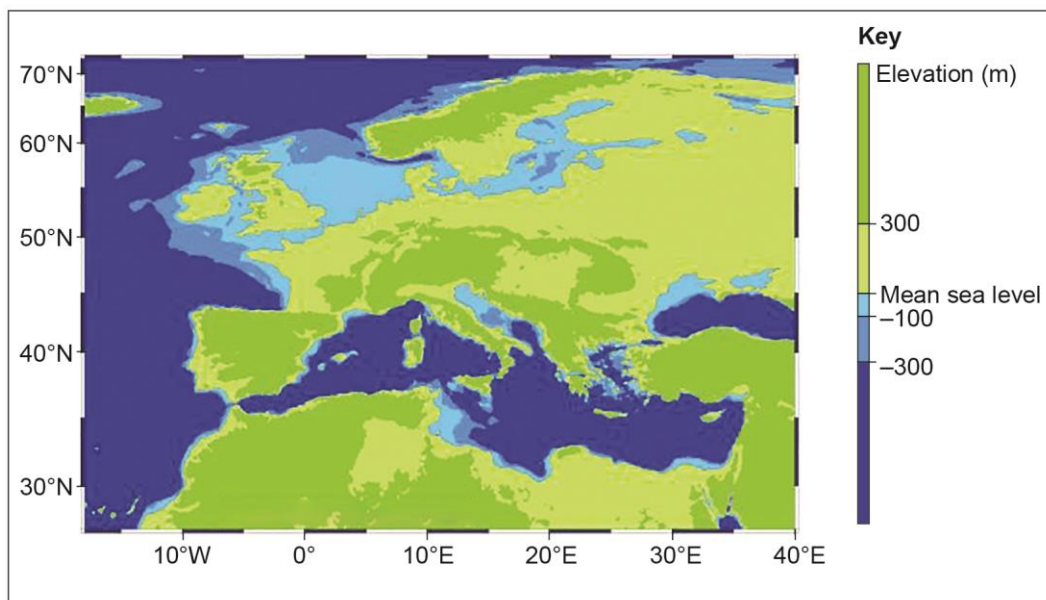


Figure 6b



Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Using **Figure 6a**, **Figure 6b** and your own knowledge, assess the potential impact of these changes on coastal landform development in this area.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Assess the relative importance of weathering and erosion in the development of coastal landscapes.

[illegible]

☆19☆

Question 4 Glacial systems and landscapes

0	4	1
---	---	---

 Outline the process of internal deformation.
[4 marks]

Figure 7 shows information about ground temperatures at the Endalen permafrost station in central Spitsbergen, Svalbard. Temperatures have been recorded in a 19-metre-deep borehole since September 2008.

Figure 7

[Graph of ground temperatures cannot be reproduced here due to third-party copyright restrictions.]

Figure 8 shows an image of the snout of the Thompson Glacier and surrounding landscape, Axel Heiberg Island, Canada.

Figure 8



Note: The Thompson Glacier emanates from the Mueller Ice Cap and is about 34 km long and 3 km wide in the ablation area. It advanced about 18 metres per year in the 1960s and 1970s. The rate of advance has decelerated since and was in the order of 11 metres per year in the period from 1977 to 2008.

0 4 . 3

Using **Figure 8** and your own knowledge, assess the view that fluvioglacial depositional processes dominate in the development of this landscape.

[6 marks]

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

0 4 . 4

'Warming taking place in fragile cold environments is set to generate unprecedented impacts affecting both people and the physical environment.'

To what extent do you agree with this view?

[20 marks]

Turn over ►

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk 找名校导师，用小草线上辅导（微信小程序同名）

Section C

Answer **one** question in this section.

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

For the multiple-choice questions, completely fill in the circle alongside the appropriate 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. 

Question 5 Hazards

0 5 . 1

What are the main characteristic processes operating at destructive plate boundaries?

[1 mark]

- A** Opposing convection currents lead to the divergence of plates. As plates pull apart magma intrudes leading to the formation of ridges. 
- B** As plates slide past each other, fault lines emerge which, following the build-up of substantial pressure, lead to the development of major earthquakes. 
- C** Subduction occurs where two plates converge. Subduction can lead to the formation of features such as deep sea trenches and island arcs. 
- D** Radioactive decay is the main process. As the plate slides over the place experiencing the decay, the magma is forced through the plate leading to the formation of island chains. 

Question 5 continues on the next page

Turn over ►

0 5 . 2

Which of the volcanic hazards is being appropriately managed?

[1 mark]

- A** The nuée ardente can be sprayed with sea water. This dramatically reduces the temperature of the gases contained within the cloud, leading to significantly reduced risk. ☐
- B** Lahars can be controlled by geological surveys and drilling to stabilise hillslopes in affected areas. This reduces the likelihood of rockfall. ☐
- C** In certain types of eruptions, lava can be safely channelled away from places of high risk. This can be achieved using explosives and artificially dug channels. ☐
- D** Liquefaction can be managed by geological surveys which can be used to create hazard maps. These maps can then be used by planners to create exclusion zones. ☐

0 5 . 3

Which is the most significant natural factor leading to the spread of a wildfire?

[1 mark]

- A** Unplanned human activities in natural locations. These activities, such as smoking or campfires, often combine with the dropping of materials which are combustible. ☐
- B** Lightning strikes, particularly in areas of dense population that have very dry conditions in summer months. California is one such state in the USA. ☐
- C** Controlled burning by farmers undertaken to remove scrub land which may have been left fallow. This removes large areas of vegetation and allows for the planting of crops. ☐
- D** Prolonged periods of drought and high rates of evapotranspiration, especially in the summer months in sub-tropical climates. A strong dry wind increases the risk. ☐

0 5 . 4

What are the characteristics of tsunamis?

[1 mark]

- A** They have a short wavelength and high amplitude. They travel at low speed, at around 30 km/h. They decrease in height as they approach land.
- B** They have a long wavelength and low amplitude. They travel at high speeds, sometimes over 700 km/h. Shallow water and the funnelling effect of bays dramatically increases height.
- C** They have a short wavelength and consist of a series of waves. They strike land in quick succession with heights sometimes exceeding 20 metres.
- D** Strong winds whip up large waves which lead to very powerful waves. The funnelling effect of bays creates super-sized waves.

☐☐☐☐

Question 5 continues on the next page

Turn over ►

Figure 10, on the insert, shows a map of Yellowstone: volcanic vents active since the last caldera collapse 640 000 years ago; earthquakes recorded between 2003 and 2008; faults; and ground deformation between 2004–2006.

[6 marks]

[illegible]

How far do you agree that secondary impacts of volcanic eruptions present a greater long-term threat to people than primary impacts?

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Question 5 continues on the next page

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

With reference to **one or more** tropical storms that you have studied, assess the extent to which exogenous factors (relationships with other places) assisted with the response to the hazard created.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

With reference to a multi-hazardous environment that you have studied, assess the view that the underlying cause(s) leading to the hazards is human activity rather than physical factors.

[illegible]

找名校导师，用小草线上辅导（微信小程序同名）

31

Do not write
outside the
box

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Question 6 Ecosystems under stress**0 6 . 1**

Which of the following are adaptations found in savanna vegetation?

[1 mark]

- A** Buttress roots give the trees stability and access to nutrients found in the upper soil. Waxy leaves and drip tips help to remove large quantities of water during the short wet season.
- B** There are distinctive layers of vegetation adapted to deal with the intense summer insolation. Trees lose their leaves in winter as insolation levels fall and the dry season arrives.
- C** Only a few tree species can survive the long dry season. Waxy leaves reduce moisture loss. Deep tree roots reach groundwater. Grasses die and return during the wet season.
- D** Coniferous trees dominate and give way to small shrubs at the edges of the savanna. Needle-like leaves are adapted to cope with the large diurnal temperature variations.

☐☐☐☐**0 6 . 2**

What is a pioneer species?

[1 mark]

- A** Following a drought, there is almost always significant die-back for most plant species. In these conditions, xerophytic pioneers colonise the area with limited competition.
- B** Pyrophytes are adapted to cope with conditions associated with wildfire. Root systems can cope with loss of vegetation above ground. This vegetation quickly returns after fire.
- C** Plant species which require very few nutrients to survive and will colonise bare rock. These species are the first to colonise following a volcanic eruption and succession follows.
- D** Once human activity has altered the climatic climax vegetation, the species are quick to adapt to the niche which is created. Pioneers readily exploit the available environment.

☐☐☐☐**Question 6 continues on the next page****Turn over ►**

0 6 . 3

What is net primary productivity (NPP)?

[1 mark]

- A** NPP is the biomass (minus respiration) produced in an ecosystem. It is a measure of the rate at which an ecosystem can capture and store carbon, usually measured in $\text{g/m}^2/\text{yr}$.
- B** NPP relates to the productivity of land for the purposes of agriculture. The addition of nitrate-based fertilisers or genetically modified crops dramatically increases NPP.
- C** As plants respire they take in oxygen and release carbon dioxide. NPP is a measure of how much oxygen is produced by plants in an ecosystem. This rate is measured as $\text{O}_2/\text{m}^3/\text{yr}$.
- D** NPP is the total amount of chemical energy (as biomass) that primary producers create in a given length of time. This is the rate at which decomposition occurs in an ecosystem.

☐☐☐☐

0 6 . 4

Where are coral reefs typically found?

[1 mark]

- A** Coral reefs form in latitudes between 30° north and south of the equator. Sea temperatures ideally need to be around 26°C . Coral reefs are unlikely to exceed depths of 50 metres.
- B** Coral reefs form wherever there is a sufficient food source and calm water. The upwelling of cold currents around 12°C brings an ample supply of phytoplankton and zooplankton, a key food source.
- C** Algal blooms in the high latitudes at 60° north provide the ideal circumstances for coral reef formation. Deep water coral is found off the east coast of Australia – the Great Barrier Reef.
- D** Coral is found anywhere on the planet. Provided the water is free from pollution and well sheltered from strong currents, some coral will form. It will not form in warm sea water.

☐☐☐☐

Figure 12, on the insert, shows data related to the status of fish stocks in selected fishing regions around Europe in 2008.

[6 marks]

[illegible]

Question 6 continues on the next page

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

Analyse the human and ecological inter-relationships which lead to the development of a plagioclimax.

[illegible]

Assess the importance of global governance in securing the long-term health and survival of coral reefs.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Find Personal Tutor from www.wisesprout.co.uk 找名校导师，用小草线上辅导（微信小程序同名）

Turn over ►

'It is simply not possible to find a true balance between biodiversity and sustainable economic development in savanna grasslands. Economic development will always come at the expense of biodiversity.'

[20 marks]

[illegible]

There are no questions printed on this page

*Do not write
outside the
box*

**DO NOT WRITE ON THIS PAGE
ANSWER IN THE SPACES PROVIDED**

Find Personal Tutor from www.wisesprout.co.uk

找名校导师，用小草线上辅导（微信小程序同名）

Copyright information

For confidentiality purposes, from the November 2015 examination series, acknowledgements of third party copyright material will be published in a separate booklet rather than including them on the examination paper or support materials. This booklet is published after each examination series and is available for free download from www.aqa.org.uk after the live examination series.

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright-holders may have been unsuccessful and AQA will be happy to rectify any omissions of acknowledgements. If you have any queries please contact the Copyright Team, AQA, Stag Hill House, Guildford, GU2 7XJ.

Copyright © 2018 AQA and its licensors. All rights reserved.