

Please write clearly in block capitals.

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# AS GEOGRAPHY

Paper 1 Physical geography and people and the environment

Tuesday 16 May 2017

Afternoon Time allowed: 1 hour 30 minutes

## Materials

For this paper you must have:

- a pencil
- a rubber
- a ruler.

You may use a calculator.

## Instructions

- Answer **either** Question 1 **or** Question 2 **or** Question 3 in Section A.
- Answer **either** Question 4 **or** Question 5 in Section B.

## Information

- The total number of marks available for this paper is 80.

## Advice

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.



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



**Section A**Answer **one** question.Answer **either** Question 1 **or** Question 2 **or** Question 3**Question 1 Water and carbon cycles**

0 1 . 1

Where are the typical stores of water within the lithosphere?

**[1 mark]**

- A** Groundwater, lakes and marshland
- B** Throughflow, rivers and percolation
- C** Groundwater flow, infiltration and stemflow
- D** Evaporation, transpiration and soil moisture budget

0 1 . 2

Which of these factors does **not** affect the rate of overland flow?**[1 mark]**

- A** The size of the catchment and the amount of rain which has fallen.
- B** The level of human activity in the area and the type of rock on which the catchment sits.
- C** The amount of soil compaction and coverage by trees within the catchment.
- D** The size of the river and its capacity, efficiency and competence.



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Outline the process of photosynthesis in the carbon cycle.

**[3 marks]**

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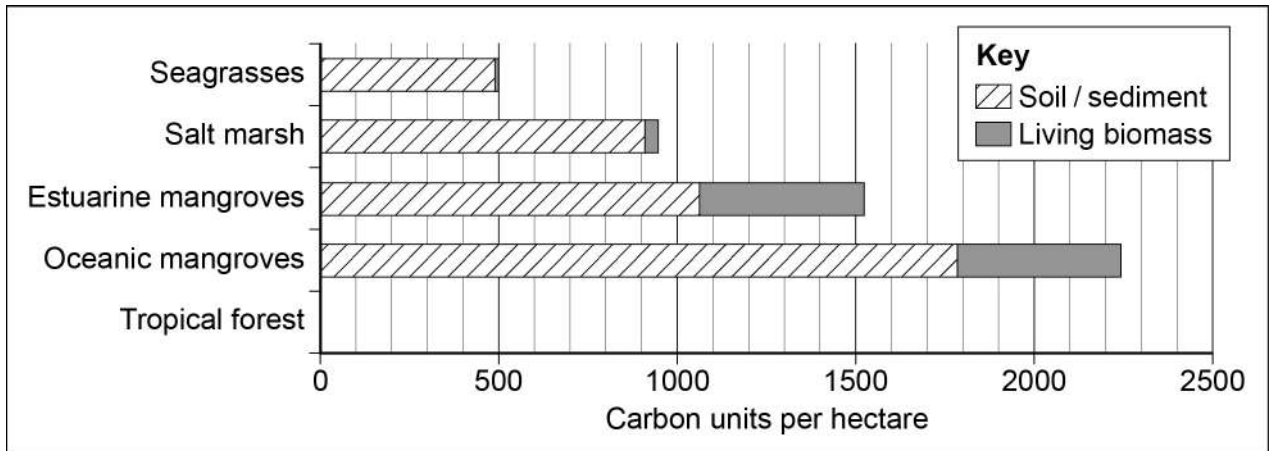
**Question 1 continues on the next page**

**Turn over ►**



**Figure 1** shows the amount of carbon stored in soil / sediment and living biomass in a range of vegetation types.

**Figure 1**



0 1 . 4

Complete **Figure 1** by adding the data shown below, and then analyse the information shown in the completed **Figure 1**.

[6 marks]

Tropical forest carbon storage	Carbon units per hectare
Soil / sediment	200
Living biomass	600

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**0 1 . 5**

How far do you agree that changes to the carbon cycle will lead to increasingly severe storm events?

**[9 marks]**

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0 1 . 6

With reference to a river catchment that you have studied, assess the potential impact of human activity upon the drainage basin.

[20 marks]

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**End of Question 1**

**Turn over ►**



**Question 2 Coastal systems and landscapes**

0 2 . 1

Which process can lead to eustatic sea level change?

**[1 mark]**

- A** Tectonic uplift caused by an earthquake in a localised place.
- B** The development of raised beaches.
- C** Thermal expansion in the major water bodies.
- D** Flooding of coastal landscapes which causes salt marshes and mud flats to develop.

0 2 . 2

What is wave quarrying?

**[1 mark]**

- A** More resistant rocks are pounded against each other in breaking waves causing the breakdown of these materials.
- B** Small pebbles and other loose debris are hurled against cliffs by powerful waves causing undercutting.
- C** Weak acids contained within seawater gradually erode cliffs in warmer waters.
- D** Air is trapped and compressed between a breaking wave and a cliff. The increase in pressure over a period of time causes rock fragments to break off.





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Outline characteristics of constructive waves.

**[3 marks]**

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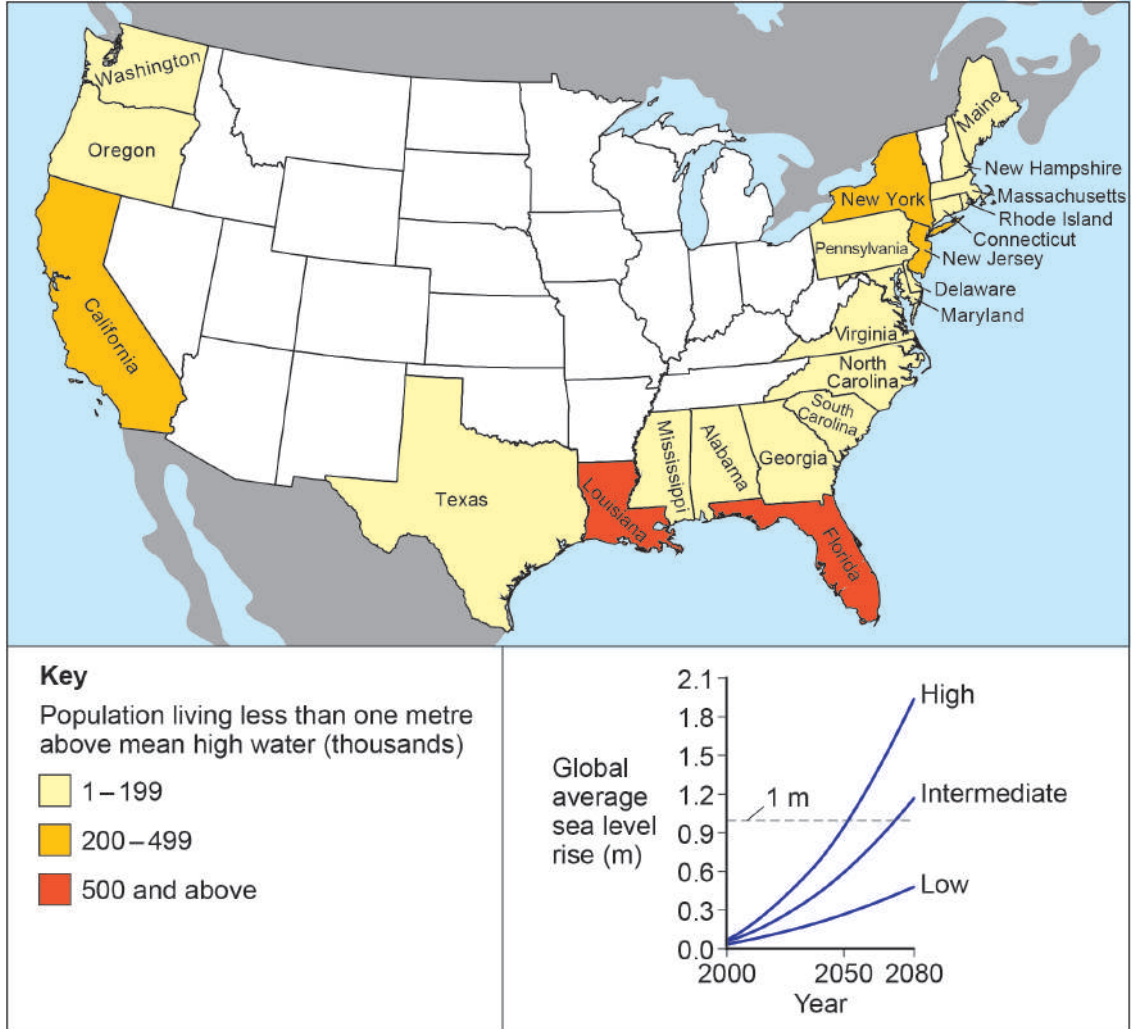
**Question 2 continues on the next page**

**Turn over ►**



**Figure 2** shows the population in the coastal states of the USA living less than one metre above mean high water, and a range of projections for sea level change.

**Figure 2**



0 2 . 4

Analyse the information shown in **Figure 2**.

[6 marks]

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0 2 . 5

Assess the view that wind is the biggest factor in determining the impact of energy in coastal environments.

**[9 marks]**

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**End of Question 2**

**Turn over ►**



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

What are the characteristics of periglacial areas?

**[1 mark]**

- A** Very low temperatures all year round with permanently frozen ground and no seasonal variation.
- B** Physical geographical landforms such as corries, arêtes and glacial troughs.
- C** Seasonal variation in temperature and the development of an active layer above the permafrost.
- D** A plentiful supply of precipitation which leads to tree growth and widespread forests.

**0 3** . **2**

What is the geomorphological process of nivation?

**[1 mark]**

- A** A type of weathering where compacted snow begins to form hollows in rock as a result of the freeze-thaw cycle.
- B** A type of erosion whereby the glacier plucks out rocks and debris as it moves down a valley.
- C** This occurs when pressure is high in a cold glacier, near its base. Ice crystals begin to form and the glacier moves under the weight and pressure.
- D** A type of mass movement found in periglacial areas. As the active layer thaws on slopes, there is a slow movement of soil downslope.



0 3 . 3

Outline characteristics of patterned ground.

**[3 marks]**

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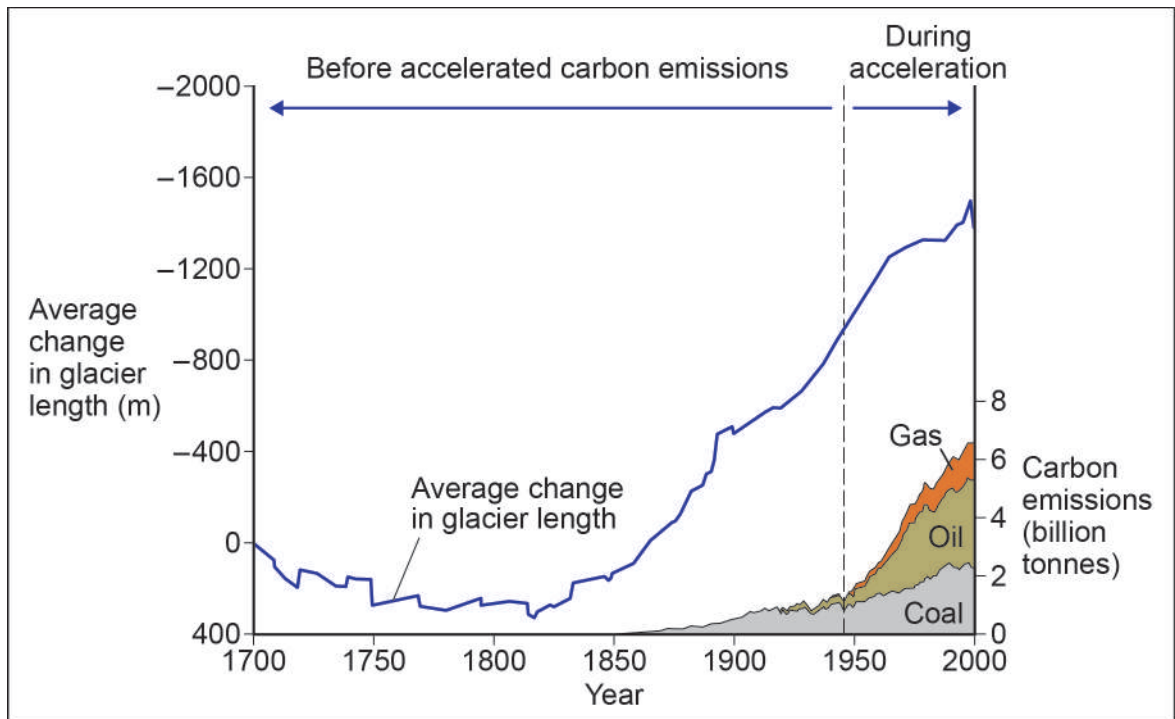
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**Question 3 continues on the next page****Turn over ►**

**Figure 3** shows data on worldwide carbon emissions and average change in glacier length.

**Figure 3**



0 3 . 4

Analyse the data presented in **Figure 3**.

[6 marks]

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Assess the role of climate in the formation of fluvio-glacial landscapes.

**[9 marks]**

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

**Turn over ►**



**Section B**Answer **one** question.Answer **either** Question 4 **or** Question 5.**Question 4****Hazards**

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How is a rift valley formed?

**[1 mark]**

- A** As tectonic plates slide past each other, earthquakes are caused at the point of pressure release, often with a very shallow focus.
- B** Tectonic processes lead to the divergence of plates. As the plates pull apart, the land collapses leading to a depression in the land.
- C** As plates converge, one plate is forced beneath the other leading to the formation of a subduction zone. Rift valleys are formed in the subduction zone.
- D** Molten rock is forced through a moving plate leading to the creation of rift valleys. Chains of islands are formed.

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What is a nuée ardente?

**[1 mark]**

- A** A type of tephra associated with a volcanic eruption, often referred to as volcanic bombs or lava bombs. These are often yellow in colour and are shaped as they fly through the air.
- B** A secondary cone on the side of a large volcano. A separate line of weakness is broken through by the magma.
- C** A glowing, superheated mass of gas, ash and dust which is emitted from a volcano. It moves at great speed and is associated with mass casualties where it strikes settlements.
- D** A thick layer of ash which falls to the ground gradually over a series of days. It can block out the sun locally and lead to localised climate change.



0 4 . 3

Outline causes of a storm surge.

[3 marks]

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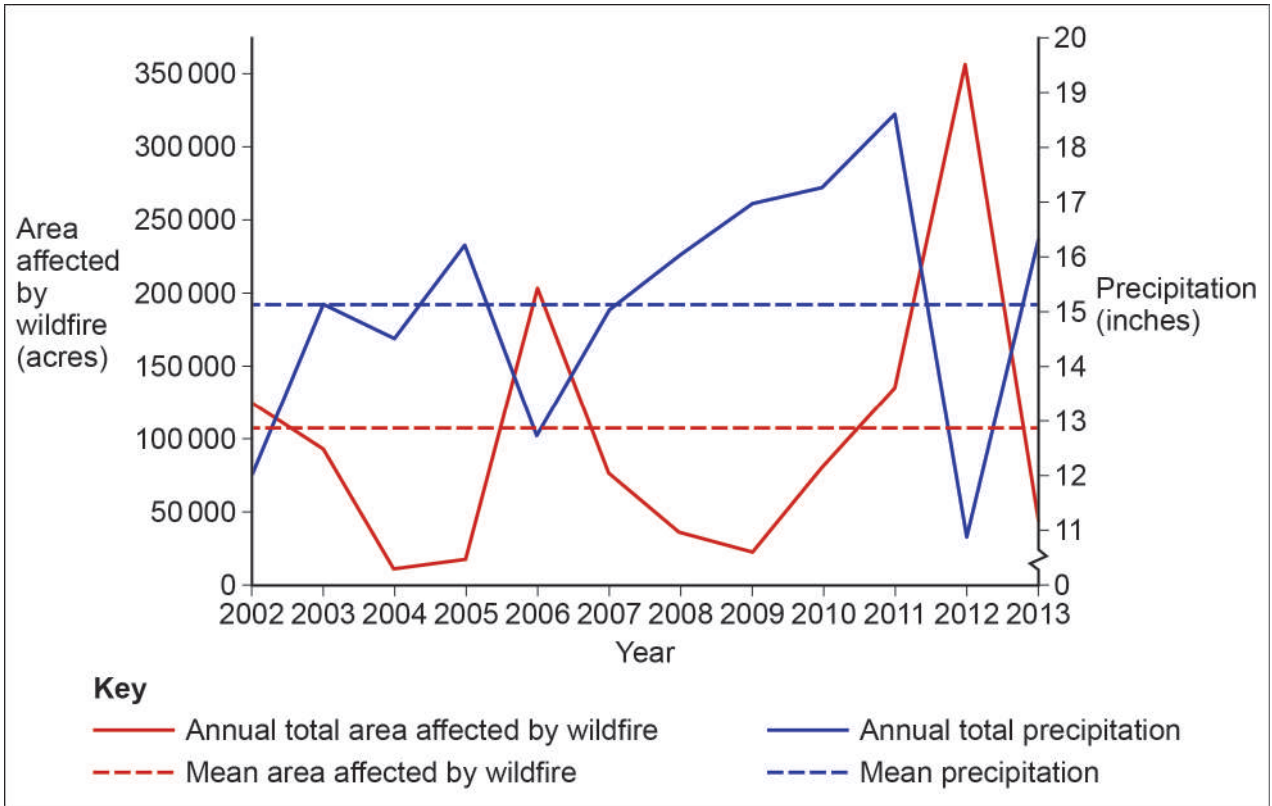
**Question 4 continues on the next page**

**Turn over ►**



**Figure 4** shows data on annual precipitation and annual area affected by wildfire in Wyoming, USA, between 2002 and 2013.

**Figure 4**



0 4 . 4

Analyse the data presented in **Figure 4**.

**[6 marks]**

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0 4 . 5

With reference to **one or more** seismic event(s) that you have studied, assess the importance of past and present processes of development in understanding the impact of the associated hazards.

[9 marks]

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Question 4 continues on the next page

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Response area for Question 4 with horizontal ruling lines.

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**End of Question 4**

**Turn over ▶**



**Question 5 Contemporary urban environments**

05 . 1

What is the process of gentrification?

**[1 mark]**

- A** Wealthy families move into suburban areas leading to a significant influx of new services. This attracts more wealthy families and the areas become even more expensive to live in.
- B** More affluent individuals and developers see the opportunity to buy property in a previously run-down area, usually in the inner city. As more people do this, the area gradually changes.
- C** Young affluent professionals move into villages surrounding cities. They often work from home with the main place of work being in a large city. The village character changes as a result of the influx.
- D** As a result of government initiatives, inner city areas see considerable improvements in the housing stock and provision of services. Training schemes and job creation schemes lead to increased affluence.

05 . 2

What is an edge city?

**[1 mark]**

- A** This is the outward expansion of cities as a result of rapid population growth. New housing is created and some services are developed to cater for the growing population.
- B** This is a town or city with historical settlement features related to defence. Such settlements are often built on top of hills, at coasts or at river confluences. They often have remnants of defensive fortifications such as castle walls.
- C** Developments which have taken place outside of the traditional structure of city growth. These are usually on the outskirts of cities in previously undeveloped locations with clear evidence of prior planning.
- D** Large and newly developed settlements designed to exploit a new resource such as mineral wealth. A new community develops as a response to the influx of migrant workers.



0 5 . 3

Outline benefits of sustainable urban drainage systems (SUDS).

**[3 marks]**

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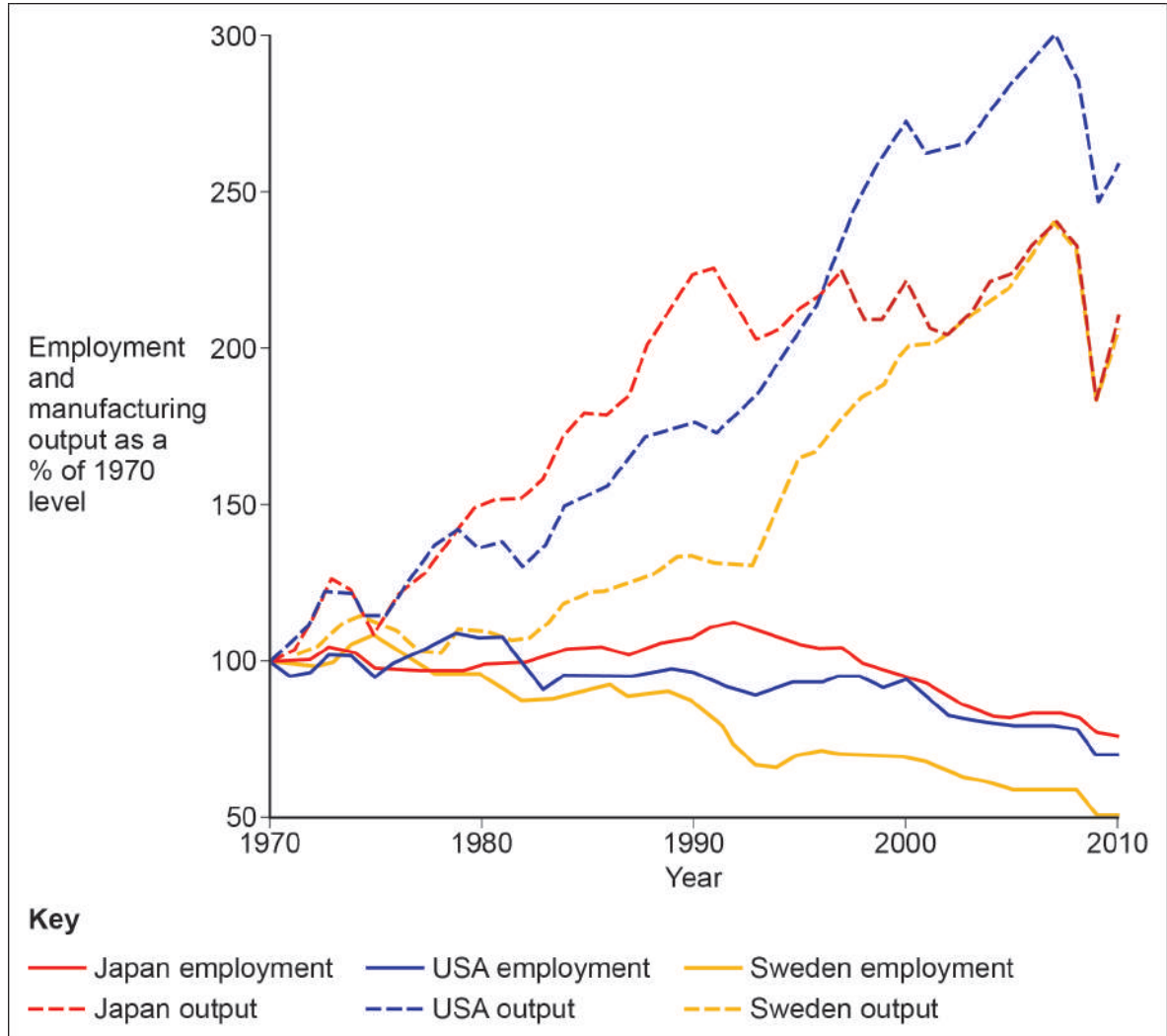
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**Question 5 continues on the next page****Turn over ►**

Figure 5 shows employment and manufacturing output data for Japan, USA and Sweden between 1970 and 2010.

Figure 5



0 5 . 4

Analyse the data presented in Figure 5.

[6 marks]

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With reference to an urban area that you have studied, assess the importance of past and present processes of development in understanding the area's characteristics.

**[9 marks]**

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**Turn over ▶**







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