Instructions
• Use black ink or ball-point pen.
• Fill in the boxes at the top of this page with your name, centre number and candidate number.
• In Section A, answer all questions.
• In Section B, answer either question 5 or 6.
• In Section C, answer either question 7 or 8.
• Answer the questions in the spaces provided – there may be more space than you need.

Information
• The total mark for this paper is 78.
• The marks for each question are shown in brackets – use this as a guide as to how much time to spend on each question.
• Questions labelled with an asterisk (*) are ones where the quality of your written communication will be assessed – you should take particular care on these questions with your spelling, punctuation and grammar, as well as the clarity of expression.
• The marks available for spelling, punctuation and grammar are clearly indicated.

Advice
• Read each question carefully before you start to answer it.
• Keep an eye on the time.
• Check your answers if you have time at the end.
SECTION A – INTRODUCTION TO THE DYNAMIC PLANET

Answer ALL questions in this section.

Topic 1: Restless Earth

1. Figure 1 is a map of the Mount St. Helens area showing possible future hazards.

![Map of Mount St. Helens area showing possible future hazards.](Source: US Geological Survey, Department of the Interior/USGS)

Figure 1

(a) Study Figure 1.

The following questions are multiple choice. Put a cross in the box of the answer that you select. **There is only one correct answer to each question.**

(i) In which direction is the settlement of Kelso from the crater of Mount St. Helens?

- [ ] A  North West
- [ ] B  West
- [ ] C  South
- [ ] D  South East

(ii) Which of the following hazards should the settlement of Kelso prepare for?

- [ ] A  Pyroclastic flows
- [ ] B  Lahars
- [ ] C  Lava flows
- [ ] D  Tsunamis
(b) Give two secondary impacts often caused by volcanic eruptions.

1

2

(c) For a named earthquake or volcanic eruption, describe the immediate response and relief efforts.

Named earthquake or volcanic eruption
(d) Describe how convection currents cause plate movements.

You may draw a diagram in the space below to help your answer.

(Total for Question 1 = 12 marks)
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Question 2 is on the next page
Figure 2 shows annual temperature variations in Europe between 900AD and 2000AD.

(a) Study Figure 2.

The following questions are multiple choice. Put a cross in the box of the answer you select. **There is only one correct answer to each question.**

(i) Which of the following best describes Europe's average annual temperature between 900AD and 2000AD?

- [ ] **A** It steadily increased.
- [ ] **B** It steadily decreased.
- [ ] **C** It varied.
- [ ] **D** It decreased then increased.

(ii) 1100AD to 1300AD was a particularly warm period. Which of the following reasons might have contributed to the higher temperatures?

- [ ] **A** Large eruptions of volcanic ash
- [ ] **B** An increase in solar output
- [ ] **C** An increase in polar ice
- [ ] **D** More industry creating greenhouse gases
(iii) Give **two** impacts of past climate change, such as the 'Little Ice Age', on the environment.

1

2

(b) Describe **two** possible **economic** impacts of future climate change.

1

2
(c) Explain why the **UK's** climate might change in the future.

(Total for Question 2 = 12 marks)
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Question 3 is on the next page
Topic 3: Battle for the Biosphere

Figure 3 shows the importance of different causes of deforestation in Brazil between 2000 and 2005.

**Key**

<table>
<thead>
<tr>
<th>Percentage of Forest Cleared</th>
<th>Graph Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle Ranching</td>
<td>Gray</td>
</tr>
<tr>
<td>Small-scale Subsistence Agriculture</td>
<td>Yellow</td>
</tr>
<tr>
<td>Large-scale Commercial Agriculture</td>
<td>Green</td>
</tr>
<tr>
<td>Logging</td>
<td>Purple</td>
</tr>
<tr>
<td>Other</td>
<td>Red</td>
</tr>
</tbody>
</table>

% of forest cleared = 5%

(a) Study Figure 3.

The following questions are multiple choice. Put a cross in the box of the answer you select. **There is only one correct answer to each question.**

(i) What was the most important cause of deforestation in Brazil between 2000 and 2005?

   - [ ] A Large-scale commercial agriculture
   - [ ] B Cattle ranching
   - [ ] C Small-scale subsistence agriculture
   - [ ] D Other

(ii) What percentage of total deforestation resulted from small-scale subsistence agriculture?

   - [ ] A 10 %
   - [ ] B 15 %
   - [ ] C 20 %
   - [ ] D 25 %
(b) Define the term **biome**.

(c) Describe how people use **two** different types of goods produced by the biosphere.
(d) Explain two ways the biosphere can be conserved.

(Total for Question 3 = 12 marks)
Figure 4 shows the percentages of people with access to clean water in four developing countries in 1988 and 2005.

(a) Study Figure 4.

The following questions are multiple choice. Put a cross in the box of the answer you select. **There is only one correct answer to each question.**

(i) In which country did access to clean water fall between 1988 and 2005?

- [ ] A Botswana
- [ ] B Burkina Faso
- [ ] C Dominican Republic
- [ ] D Indonesia

(ii) What percentage of people had access to clean water in Indonesia in 2005?

- [ ] A 38%
- [ ] B 60%
- [ ] C 75%
- [ ] D 82%
(b) Define the term **precipitation**.

(c) Describe **two** benefits of large-scale water management schemes.
(d) Explain how intensive agriculture can affect water quality.

(Total for Question 4 = 12 marks)

TOTAL FOR SECTION A = 48 MARKS
Question 5 is on the next page
SECTION B – SMALL-SCALE DYNAMIC PLANET

Answer ONE question in this section.

Topic 5: Coastal Change and Conflict

If you answer Question 5 put a cross in the box ☐.

Spelling, punctuation and grammar will be assessed in 5*(d).

5 Figure 5 shows the management measures used to protect a section of coastline.

(Source: © www.geographyphotos.com)

Figure 5

(a) Study Figure 5.

The following questions are multiple choice. Put a cross in the box of the answer you select. There is only one correct answer to each question.

(i) Name the hard engineering management measure at X.

☐ A Rip-rap (rock armour)
☐ B Groyne
☐ C Gabions
☐ D Sea wall

(ii) Which of the following soft engineering management measures may have been used at Y?

☐ A Beach replenishment
☐ B Managed retreat
☐ C Planting Marram grass
☐ D Strategic realignment
(b) Outline how rock type affects the rate of coastal retreat. (2)

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(c) Outline one way rapid coastal erosion can affect local people. (2)

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*(d) Explain the formation of stacks.

You may draw a diagram in the space below to help your answer.

(Total for spelling, punctuation and grammar = 3 marks)
(Total for Question 5 = 15 marks)
Question 6 is on the next page
Topic 6: River Processes and Pressures

If you answer Question 6 put a cross in the box ☐.

Spelling, punctuation and grammar will be assessed in 6*(d).

6 Figure 6 shows some management measures used to control river flooding.

![Image of Figure 6]

**Figure 6**

(a) Study Figure 6.

The following questions are multiple choice. Put a cross in the box of the answer you select. There is only one correct answer to each question.

(i) Name the type of hard engineering at X.

☐ A Levee
☐ B Dam
☐ C Flood gate
☐ D Diversion channel

(ii) Name the type of management measure at Y.

☐ A Afforestation
☐ B River straightening
☐ C Washland
☐ D Flood wall
(b) Outline how precipitation can increase the likelihood of river flooding.

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(c) Outline one way river flooding can affect local people.

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*(d) Explain the formation of waterfalls. You may draw a diagram in the space below to help your answer. (6)*

(Total for spelling, punctuation and grammar = 3 marks)
(Total for Question 6 = 15 marks)

TOTAL FOR SECTION B = 15 MARKS
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Question 7 is on the next page
Figure 7 shows the estimated threat to coral reefs in part of the Indian Ocean.
(a) Study Figure 7.

The following questions are multiple choice. Put a cross in the box of the answer you select. **There is only one correct answer to each question.**

(i) Which of the following island states has no reefs at high risk?

- [ ] A Seychelles
- [ ] B Comoros
- [ ] C Mauritius
- [ ] D Réunion

(ii) How long is Kenya's coastline?

- [ ] A 100 km
- [ ] B 300 km
- [ ] C 600 km
- [ ] D 1000 km

(b) Give two local actions taken to protect marine eco-systems.

1

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2

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(c) Outline how one global action helps protect marine eco-systems.

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*(d) For a named marine eco-system, explain how it is threatened by human actions.*

**Named marine eco-system:**

**[Additional text here]**

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*(Total for spelling, punctuation and grammar = 3 marks)*

*(Total for Question 7 = 15 marks)*
Figure 8 shows the population of counties in Alaska, USA.
(a) Study Figure 8.

The following questions are multiple choice. Put a cross in the box of the answer you select. **There is only one correct answer to each question.**

(i) Which county in Alaska has the largest population? (1)

- □ A  Arctic Slope
- □ B  Calista
- □ C  Cook Inlet
- □ D  Doyon

(ii) What percentage of the population of Bering Straits County is Native American? (1)

- □ A  25%
- □ B  50%
- □ C  75%
- □ D  100%

(b) Give two ways plants have adapted to survive in **hot arid** regions. (2)

1 .......................................................................................................................... ... ......................

2 .......................................................................................................................... ... ......................

(c) Outline how **one global** action helps protect extreme environments. (2)

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*(d) Explain how climate change threatens extreme environments. (6)*

(Total for spelling, punctuation and grammar = 3 marks)
(Total for Question 8 = 15 marks)

TOTAL FOR SECTION C = 15 MARKS
TOTAL FOR PAPER = 78 MARKS