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.
• 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

Some questions must be answered with a cross in a box ✗. If you change your mind about an answer, put a line through the box ✗ and then mark your new answer with a cross ✗.

1 Figure 1 shows the global variations in tsunami risk.

![Map showing global variations in tsunami risk](http://www.mapsofworld.com/world-maps/tsunami-zones.html)

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>No risk of tsunami zone</td>
<td></td>
</tr>
<tr>
<td>Low risk of tsunami zone</td>
<td></td>
</tr>
<tr>
<td>Moderate risk of tsunami zone</td>
<td></td>
</tr>
<tr>
<td>High risk of tsunami zone</td>
<td></td>
</tr>
</tbody>
</table>

(Source: http://www.mapsofworld.com/world-maps/tsunami-zones.html)

Figure 1

(a) Study Figure 1.

(i) Which one of the following coastlines has the lowest risk of tsunamis? (1)

- [ ] A Western North America
- [ ] B Western South America
- [ ] C Western Africa
- [ ] D Eastern Asia
(ii) Which one of the following is the main cause of tsunamis?

- [ ] A volcano
- [ ] B tropical storm
- [ ] C tornado
- [ ] D earthquake

(b) Outline one difference between primary and secondary impacts of tectonic hazards.

(2)

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(c) For a named tectonic hazard event, describe the immediate responses.

(4)

Named tectonic hazard event

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(d) Explain why earthquakes occur on conservative plate boundaries.

You may use a diagram to help your answer.

(Total for Question 1 = 12 marks)
Topic 2: Changing Climate

2 Figure 2 shows the advance and retreat of Sólheimajökull, an Icelandic glacier, between 1930 and 2010.

(Source: www.geocaching.com)

Figure 2

(a) Study Figure 2.

(i) In which one of the following decades did the glacier retreat most?

- A 1940s
- B 1950s
- C 1960s
- D 2000s

(ii) Which one of the following statements best describes the changes in the glacier in the 1990s?

- A It retreated throughout the decade.
- B It retreated in the first few years and then advanced.
- C It advanced in the first few years and then retreated.
- D It advanced throughout the decade.
(b) Other than glacial advance and retreat, describe two pieces of evidence that show that climate change has happened in the past.

1

2

(c) What is meant by the term **greenhouse effect**?
(d) Describe the possible impacts of future climate change on a named developing country.

Named developing country ..............................................................

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(Total for Question 2 = 12 marks)
Figure 3 shows the numbers of endangered species, which are likely to become extinct, for the seven continents.
(a) Study Figure 3.

(i) Which one of the following continents has the highest number of endangered species?

- [ ] A North America
- [ ] B Africa
- [ ] C Asia
- [ ] D Europe

(1)

(ii) What is the approximate total number of endangered species across all continents?

- [ ] A 10 000
- [ ] B 5 000
- [ ] C 7 250
- [ ] D 2 500

(1)

(iii) Outline one reason why tropical rainforests might have many endangered species.

(2)
(b) For a named location, describe the local management measures being used to conserve the biosphere.

Named location .................................................................

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(c) Explain why altitude affects biome location.

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(Total for Question 3 = 12 marks)
Topic 4: Water World

4 Figure 4 shows the changing supply and demand of water per person in China since 2000.

![Graph showing the changing supply and demand of water per person in China from 2000 to 2011. The graph includes a blue line for water demand per person and a red line for water supply per person. The y-axis represents the percentage change compared to 2000, varying from -25% to +10%. The x-axis represents the years from 2000 to 2011. The graph indicates that water demand per person has fluctuated, with some years showing an increase and others a decrease. Water supply per person also shows fluctuations, with some years seeing an increase and others a decrease.](http://chinawaterrisk.org/wp-content/uploads/2015/04/Towards-A-Water-Energy-Secure-China-CWR0415.pdf)


Figure 4

(a) Study Figure 4.

(i) Which one of the following best describes the changes in water supply per person?

- A It increased and decreased but was lowest in 2011.
- B It increased in every year except 2009.
- C It increased in more years than it decreased.
- D It increased in all years.

(ii) Which one of the following is the most likely impact of water shortages in China?

- A Higher risk of crop failure.
- B Decrease in waterborne diseases.
- C Cheaper prices for clean water.
- D Less time spent collecting clean water.
(iii) Suggest **one** reason why demand for water has risen in China.

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(b) For a named large-scale water management scheme, describe **one** cost and **one** benefit.

Large-scale water management scheme

Cost

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Benefit

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(c) Outline two threats to water quality.

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(Total for Question 4 = 12 marks)

TOTAL FOR SECTION A = 48 MARKS
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 a cliff collapse in the west of England.

Figure 5

(a) Study Figure 5.

(i) Which one of the following is the most likely process of mass movement taking place?

☐ A rockfall
☐ B weathering
☐ C attrition
☐ D slumping

(1)
(ii) Which **one** of the following is the most likely cause of this cliff collapse? 

- [ ] A  A period of light rain and stormy seas.
- [ ] B  A period of heavy rain and stormy seas.
- [ ] C  A period of light rain and calm seas.
- [ ] D  A period of heavy rain and calm seas.

(b) Outline **one** method of soft engineering used in the management of coasts.

(c) State **two** differences between constructive and destructive waves.
*(d) Explain the formation of a stack.

You may use a diagram to help your answer. (6)*
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 river erosion in North Carolina, USA.

(Source: http://www.bae.ncsu.edu/programs/extension/wqg/sri/southfork.htm)

Figure 6

(a) Study Figure 6.

(i) Which one of the following is the most likely process causing this river erosion?

□ A hydraulic action
□ B weathering
□ C attrition
□ D solution

(ii) Which one of the following is the most likely cause of this river bank collapse?

□ A A period of light rain and high discharge.
□ B A period of heavy rain and high discharge.
□ C A period of light rain and low discharge.
□ D A period of heavy rain and low discharge.
(b) Outline one method of soft engineering used in the management of rivers.

(c) State two differences between the lower and upper courses of rivers.
*(d) Explain the formation of a floodplain.

You may use a diagram to help your answer.

(6)
SECTION C – LARGE-SCALE DYNAMIC PLANET

Answer ONE question in this section.

Topic 7: Oceans on the Edge

If you answer Question 7 put a cross in the box □.

Spelling, punctuation and grammar will be assessed in 7*(d).

7 Figure 7 shows the top five items of waste found on Californian beaches on ‘Clean-up day’, 2015.

1 Cigarettes
2 Food wrappers/containers (plastic)
3 Drinks bottles (plastic)
4 Bags (plastic)
5 Drinks bottles (glass)

(Source: from switchboard.nrdc.org)

Figure 7

(a) Study Figure 7.

(i) Which one of the following materials made up most of this waste?  

□ A plastic  
□ B glass  
□ C metal  
□ D paper
(ii) Which **one** of the following is most likely to contribute to an increase in this waste?

- [ ] A  overfishing
- [ ] B  tourism
- [ ] C  intensive agriculture
- [ ] D  industrial pollution

(b) Outline **one** way coastal development is a threat to **either** mangrove swamps or coral reefs.

(c) What is meant by the term **nutrient cycle**?
*(d) Using examples, explain how global actions can help maintain ocean health.*

(Total for spelling, punctuation and grammar = 3 marks)
(Total for Question 7 = 15 marks)
Topic 8: Extreme Environments

If you answer Question 8 put a cross in the box ☐.

Spelling, punctuation and grammar will be assessed in 8*(d).

8 Figure 8 shows how Fennec foxes have adapted to their environment.

- Fennec foxes live in holes underground where they hide during the day and raise their young.
- They hunt at night.
- Excellent hearing helps them find their prey and big ears help keep them cool.

A Fennec fox

(Source: used under Creative Commons)

Figure 8

(a) Study Figure 8.

(i) Which one of the following is an adaptation made by Fennec foxes to high temperatures?

☐ A long whiskers
☐ B long tail
☐ C big ears
☐ D dark eyes

(ii) Which one of the following may threaten this species?

☐ A deforestation
☐ B climate change
☐ C sea level rise
☐ D marine pollution
(b) Outline one way in which people have adapted to extreme environments.

(c) What is meant by the term *desertification*?
*(d) Using examples, explain the role of global actions in protecting extreme environments from climate change.*

(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

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