Cambridge IGCSE

Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

6439921858

ENVIRONMENTAL MANAGEMENT **0680/13**

Paper 1 Theory **October/November 2019**

1 hour 45 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your centre number, candidate number and name in the spaces at the top of this page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **18** printed pages and **2** blank pages.

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[Turn over

Section A

1 **(a)** Complete the sentences about the atmosphere of the Earth.

The atmosphere of the Earth is a mixture of liquids, solids and ..... .

The most abundant element in the atmosphere is nitrogen, followed by ..... ,

which forms around 21% of the atmosphere.

The atmosphere is divided into zones, the lowest of these is the ..... .

This is the zone where clouds and precipitation form.

Atmospheric pressure ..... as the height in the atmosphere increases.

[4]

(b) Sulfur dioxide and oxides of nitrogen react with water in the atmosphere to form acid rain.

Describe **three** effects acid rain may have on the environment.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 7]

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2 The photograph shows a location where marble is being extracted.



(a) Name the method of extraction shown in the photograph.

..... [1]

(b) Some rocks and minerals are in short supply.

State **two** strategies for the sustainable use of rocks and minerals.

1 .....

.....

2 .....

.....

[2]

(c) Suggest **three** benefits of mineral extraction for the economy of a country.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 6]

3 The photograph shows flooding in a city.



(a) Suggest **three** reasons why the development of cities, such as the one shown in the photograph, may increase the risk of flooding.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

(b) A flood in a more economically developed country (MEDC) might have less of an impact on the human population than in a less economically developed country (LEDC).

Suggest reasons why.

.....

.....

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..... [3]

(c) State **one** opportunity a flood might provide to people.

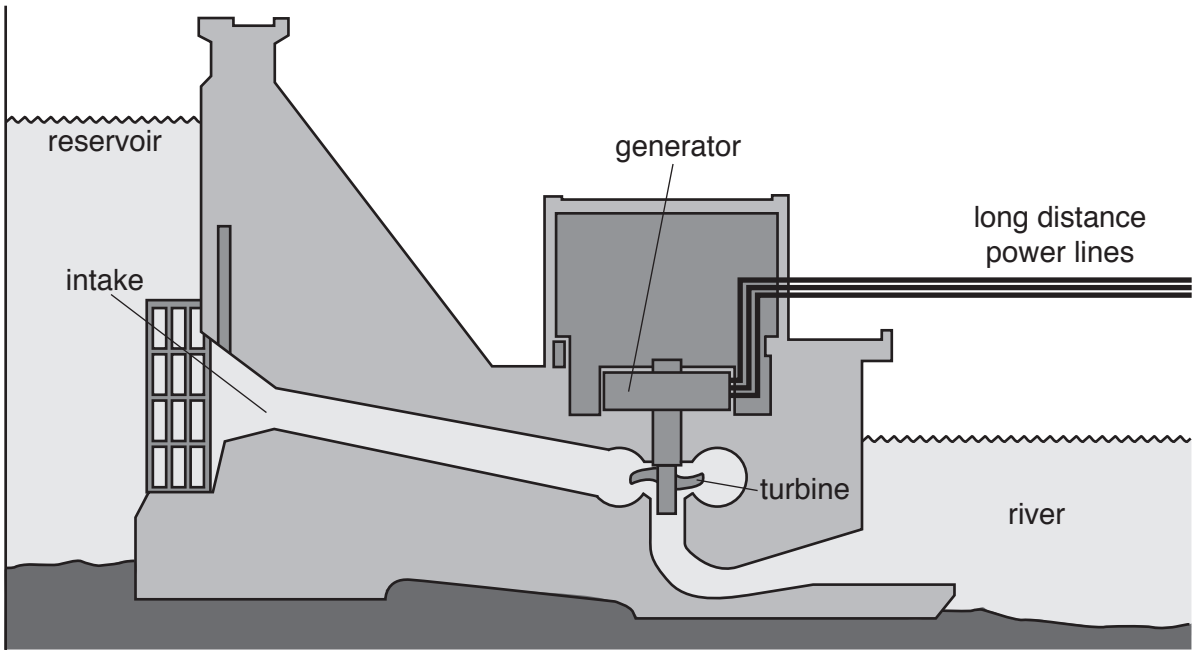
.....

..... [1]

[Total: 7]

Section B

4 The diagram shows a cross-section through a hydro-electric power station.



(a) Explain how electricity is generated in a hydro-electric power station.

.....

.....

.....

.....

.....

..... [3]

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(b) A report in a local newspaper is about a planned hydro-electric power station.

> **New power station planned**
>
> The government has approved plans for a new hydro-electric power station. Building work should start next year.
>
> When completed, it is expected that the power station will provide 4 800 000 kW h of electricity each day. Local politicians agree with the plans but some people disagree and are writing to the government to express their views.

(i) A typical household in the area uses 12 kW h of electricity each day.

Calculate the number of households the new power station will be able to supply with electricity each day.

..... households [1]

(ii) Suggest **two** ways the new hydro-electric power station may benefit the local population.

1 .....

.....

2 .....

.....

[2]

(iii) Some local people disagree with the construction of the new hydro-electric power station.

Suggest reasons why.

.....

.....

.....

..... [2]

(c) The table shows information about the cost of generating electricity from different energy resources in the United States of America (USA).

energy resource	fossil fuel	renewable resource	cost / USD per kW h
coal	✓		0.120
wind			0.100
biomass			0.098
natural gas			0.075
hydro-electric			0.064
solar			0.058
geothermal			0.050

(i) Complete the table to identify each energy resource as either a fossil fuel or a renewable resource. One has been completed for you. [1]

(ii) Use the table to compare the cost of generating electricity using fossil fuels with using renewable resources in the USA.

.....

.....

.....

.....

.....

..... [3]

[Total: 12]

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5 An article from a farming magazine is about a new genetically modified (GM) crop.

New genetically modified crop

Brazil's latest genetically modified (GM) soybean is about to be planted for the first time. The new GM soybean is resistant to a range of herbicides and produces larger yields than non-GM soybeans. Soybeans are eaten by humans and animals.

This new GM soybean will be exported to 17 countries, including China, the largest global importer of soybeans.

Brazilian scientists are one of the world's leading developers of GM crops. Brazil is the second largest grower of GM crops in the world, with over 43 million hectares currently in production, of which 29 million hectares are GM soybeans.

(a) Calculate the percentage of the current area of GM crops in Brazil that is used for growing soybeans.

..... % [1]

(b) Suggest **two** reasons why the development of the new GM soybean will benefit the economy of Brazil.

1 .....

.....

2 .....

.....

[2]

(c) Suggest **one** way of controlling weeds in the fields where the new GM soybean crops are growing.

.....

..... [1]

(d) The table shows the value of the GM soybean crop in Paraguay from 2002 to 2015.

year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
crop value / million USD	13.4	20.4	29.9	40.0	70.0	82.6	87.5	87.8	58.8	60.5	85.9	82.7	95.5	95.4

(i) Calculate the average crop value for the period 2011 to 2015.

..... million USD [1]

(ii) Describe the trends in crop value from 2002 to 2015.

.....

.....

.....

..... [2]

(e) Some people disagree with the use of GM techniques for food production.

Discuss the environmental advantages and disadvantages of introducing GM crops.

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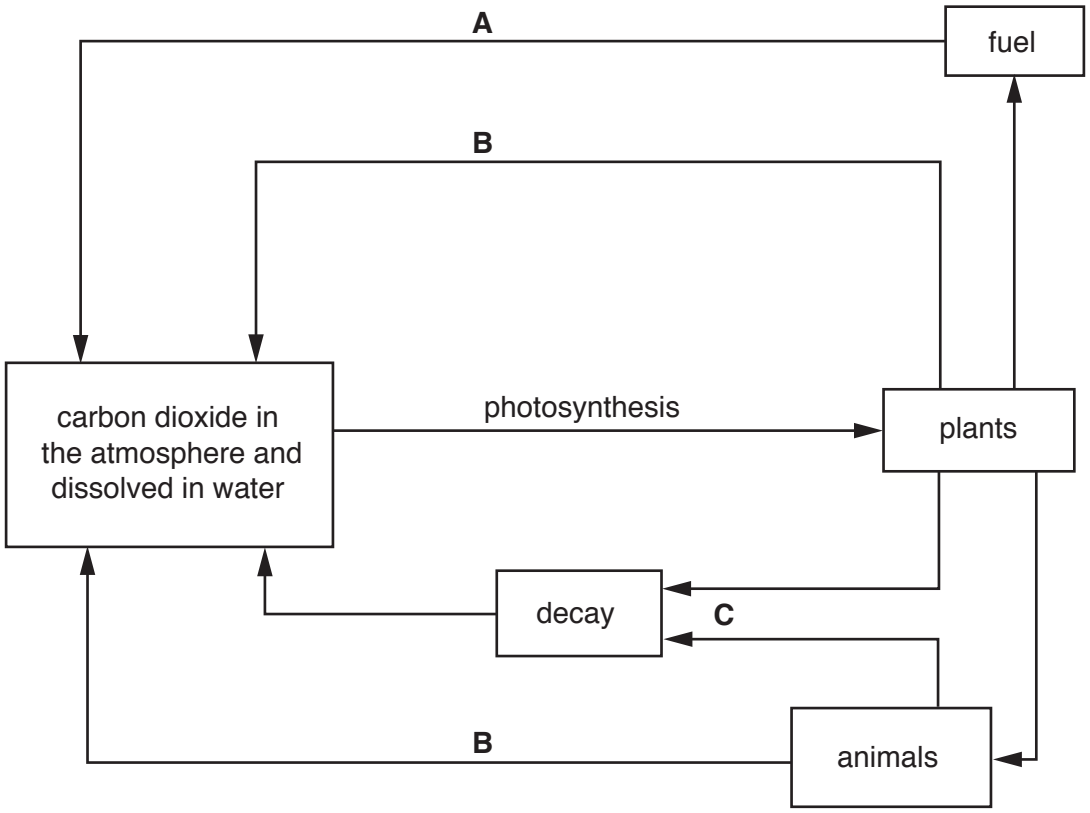
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..... [5]

[Total: 12]

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6 The diagram shows part of the carbon cycle.

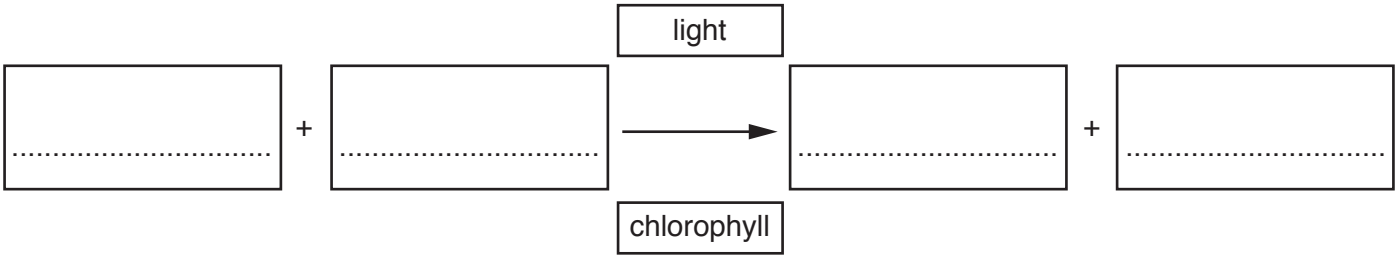


(a) Match each process to the correct letter, **A**, **B** or **C**, on the diagram.

process	letter
combustion	……..
death	……..
respiration	……..

[2]

(b) (i) Complete the word equation for photosynthesis.



[2]

(ii) Explain why chlorophyll is needed for photosynthesis.

.....

.....

.....

..... [2]

(c) One impact of deforestation is increased carbon dioxide in the atmosphere.

Describe **two** other impacts of deforestation.

1 .....

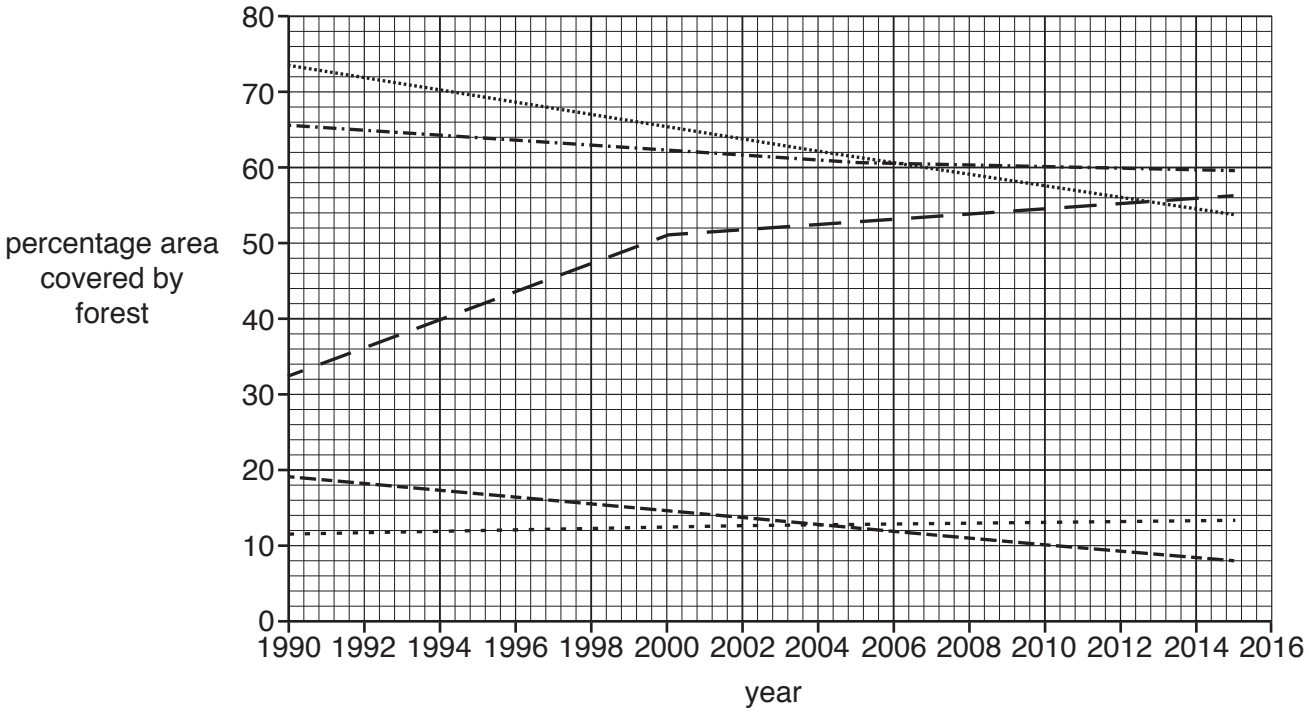
.....

2 .....

.....

[2]

(d) The graph shows the change in the percentage coverage of forests for some countries between 1990 and 2015.



(i) Use the data in the table to plot the percentage area covered by forest for China.

year	1990	1994	1998	2002	2006	2010	2015
percentage area covered by forest	17	18	18	20	21	21	22

[3]

(ii) Identify the country that has the greatest decrease in the percentage area covered by forest between 1990 and 2015.

..... [1]

(iii) The table shows the actual area of forest in km^2 for Puerto Rico in 1990 and 2015.

year	area of forest /km^2
1990	2870
2015	4960

Calculate the percentage increase in the area of forest from 1990 to 2015 in Puerto Rico.

..... % [2]

(iv) A student researched the impact of hurricanes in 2017 on the area of forest in Puerto Rico.

They made the following notes.

Puerto Rico - Hurricane impacts in 2017	
area of forest before hurricane	4960 km^2
percentage of trees uprooted or damaged	85%
percentage of trees likely to re-grow	65%
loss of leaves by hurricane	almost all
expected time for damaged trees to re-grow	15 years

Use the student's notes to complete the table.

area of trees **not** uprooted or damaged	.....
expected year for damaged trees to have re-grown	.....

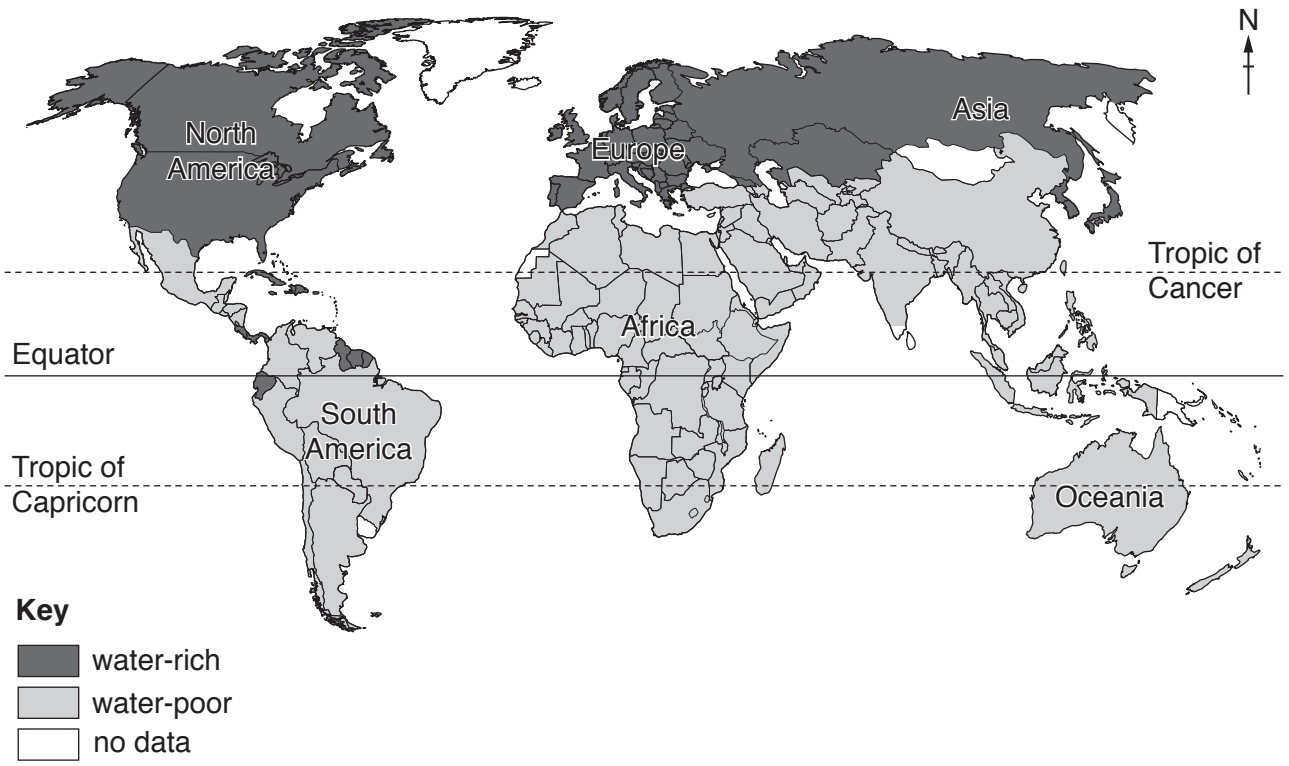
[2]

[Total: 16]

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7 The map shows the predicted availability of water in different countries in 2025.

Some countries will be water-rich and others will be water-poor.



(a) Describe the predicted distribution of water-rich and water-poor regions in 2025.

.....

.....

.....

.....

.....

..... [3]

(b) Suggest **three** reasons why countries may be water-poor.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

[Total: 6]

8 The European Union (EU) sets quotas on the amount of fish allowed to be caught each year.

The total allowable catch of bluefin tuna in 2015 was 15 821 tonnes. The actual catch of bluefin tuna was 9320 tonnes.

(a) Calculate the percentage of the total allowable catch of bluefin tuna that was actually caught in 2015.

..... % [1]

(b) Suggest ways the amount of bluefin tuna caught in 2015 will impact on the future bluefin tuna population.

.....

.....

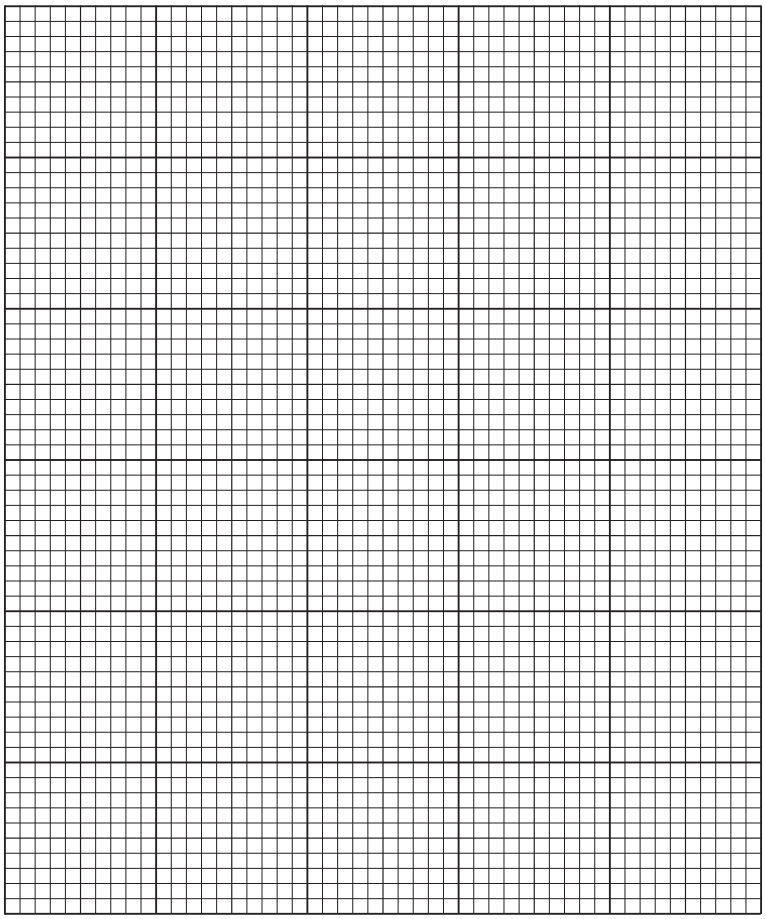
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..... [2]

(c) The actual catch of bluefin tuna by EU countries in 2015 is shown in the table.

country	Greece	Spain	France	Croatia	Italy	Cyprus	Malta	Portugal
actual catch / tonnes	150	2960	2900	460	2300	80	190	280

(i) Draw a bar chart to show the actual catch of bluefin tuna per country.



[4]

(ii) List the three EU countries with the highest bluefin tuna catch in rank order from highest to lowest.

	rank	**country**
highest ↓	1st	.....
	2nd	.....
lowest	3rd	.....

[1]

(d) 'It is **not** possible to make all fishing sustainable.'

How far do you agree with this statement? Give reasons for your answer.

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..... [6]

[Total: 14]

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