



Coimisiún na Scrúduithe Stáit
State Examinations Commission

Leaving Certificate Examination
Sample 2

Climate Action and Sustainable
Development

Higher Level

2 hours 30 minutes

300 marks

Examination Number

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Date of Birth

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For example, 3rd February
2005 is entered as 03 02 05

Centre Stamp

Instructions

Write your answers in blue or black pen. You may use pencil and colouring pencils for graphs and diagrams only.

Write your answers in the spaces provided in this booklet. There is space for extra work at the end of the booklet. Label any such extra work clearly with the question number and part.

This examination booklet will be scanned and your work will be presented to an examiner on screen. Anything that you write outside of the answer areas may not be seen by the examiner.

Section A 60 marks

There is one question in this section, answer **all** parts of this question.

Section B 160 marks

Answer any **four** questions in this section. Each question carries 40 marks.

Section C 80 marks

Answer **one** question in this section. Each question carries 80 marks.

Answer **all** parts of this question.

Question 1

(60 marks)

- (a) Examine **Figure 1** below which shows the greenhouse effect and answer the question that follows.

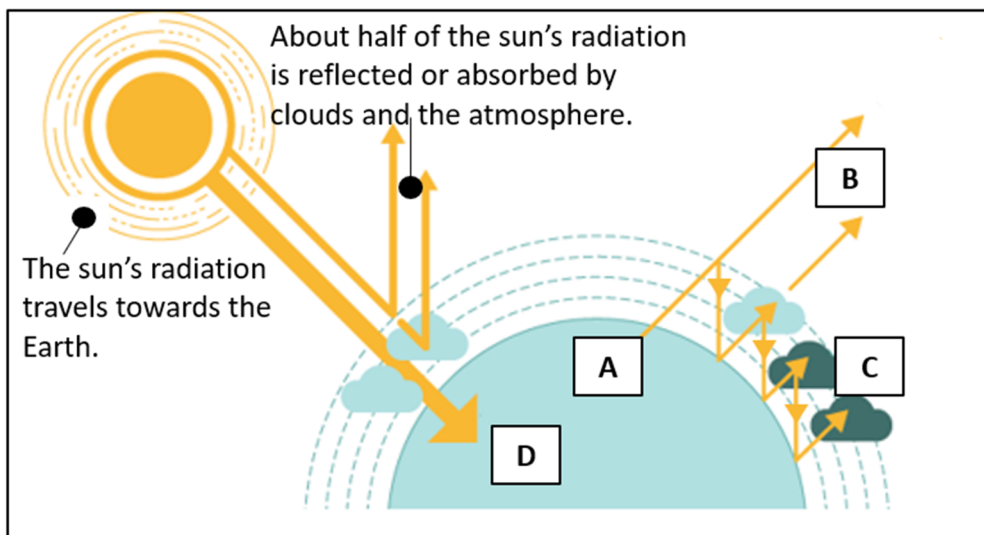


Figure 1

Match each of the labels **A**, **B**, **C** and **D** from **Figure 1** with the description in the table that best matches it. One has been completed for you.

Description	Label
The Earth's surface re-emits some energy as infra-red radiation.	A
The sun's energy that is not absorbed by the atmosphere reaches the Earth's surface, where some is absorbed.	
Some of the energy re-emitted by the Earth passes directly through the atmosphere.	
Some of the energy re-emitted by the Earth is trapped in the atmosphere by greenhouse gases.	

- (b) Match each of the natural factors listed below with its effect on the Earth's climate in the table. One has been completed for you.

Natural Factors			
A The evolution of green algae and plants	B The formation of oceans	C The formation of fossil fuels	D Volcanic eruptions

Effect on Earth's Climate	Letter
This cooled Earth's climate due to less of the sun's energy reaching Earth's surface.	D
This absorbed CO ₂ and global temperatures decreased as a result.	
This released oxygen and absorbed CO ₂ and global temperatures decreased.	
This locked carbon away, reducing CO ₂ in Earth's atmosphere and global temperatures decreased.	

- (c) Which **three** of the following demands are best aligned with a global campaign for climate justice?

Tick (✓) the **three** correct boxes

- (i) Significant reductions in greenhouse gas emissions in the Global North. ☐
- (ii) Payment of ecological debt to countries of the Global South. ☐
- (iii) A key role for indigenous communities in making climate change decisions at United Nations conferences. ☐
- (iv) Equal reductions in greenhouse gas emissions by all countries. ☐
- (v) Loans, to be repaid with interest, provided by richer countries to the countries worst impacted by climate change. ☐

- (d) Examine the graph in **Figure 2** below which shows information about atmospheric CO₂ at Mauna Loa Observatory, Hawaii, and answer the questions that follow.

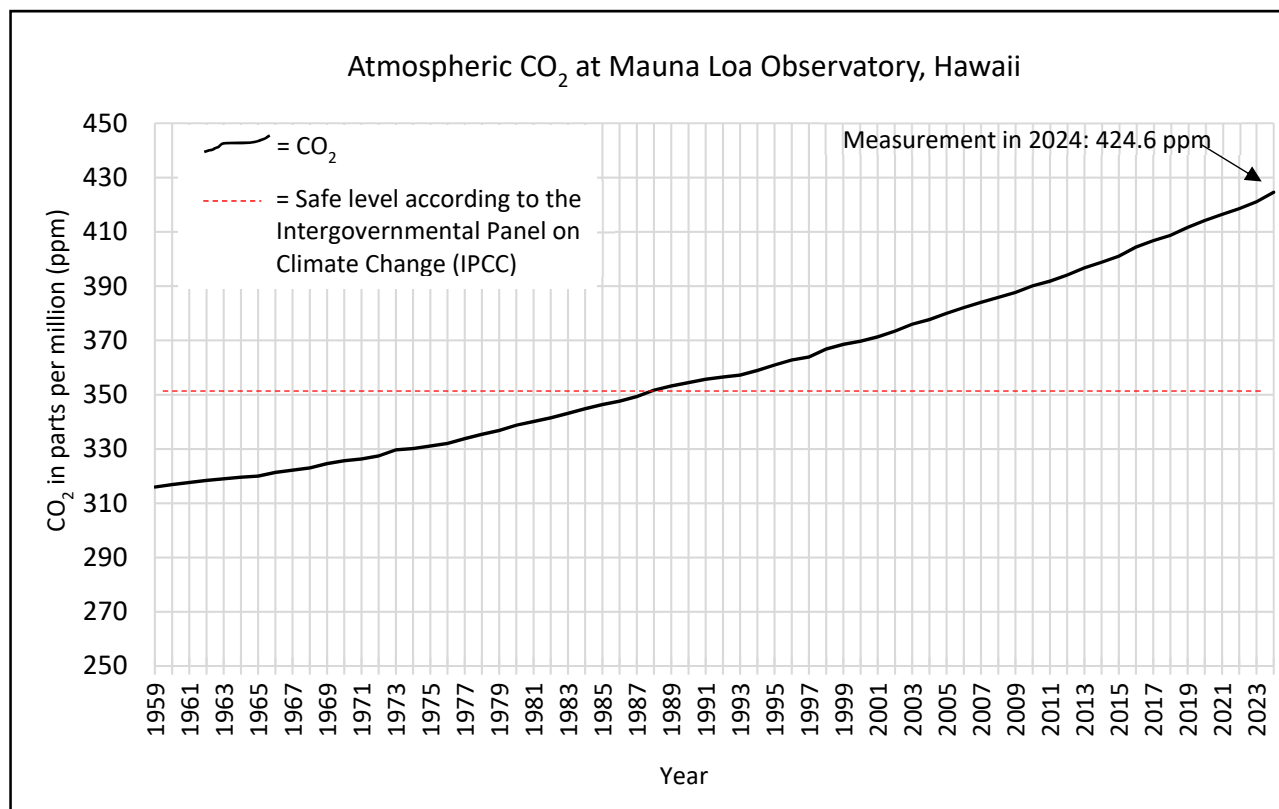


Figure 2

- (i) What year was the safe level of atmospheric CO₂ first exceeded?

- (ii) Calculate the amount by which the measurement of CO₂ in 2024 exceeded the safe level.

Roughwork:

Answer:

- (e) Each of the terms listed below is an example of direct action. Match each example with the description in the table that best matches it. One has been completed for you.

Example of Direct Action			
A Community organising	B Creating alternatives	C Civil disobedience	D Boycott

Description	Example
Refusing to deal with a person, product, organisation, or country.	D
People knowingly breaking or ignoring a law to bring attention to and bring about social change or a change in law.	
Collaborative activity where people build relationships and work together in a local area or group to change a situation themselves.	
Establishing new initiatives, organisations, businesses, culture or other solutions to meet the needs of society or environment.	

- (f) Define *colonialism*.

(g) Indicate whether each of the following statements is true or false by ticking (✓) the correct box for each.

		True	False
(i)	Degrowth is an economic approach that emphasises decoupling economic growth from human development.	☐	☐
(ii)	Doughnut Economics is an economic approach promoted by Kate Raworth which encourages human activity to exceed social and planetary boundaries.	☐	☐
(iii)	Circular Economy is a model of production and consumption which encourages the purchase of new products and the dumping of anything that is no longer found useful.	☐	☐

(h) (i) Identify **one** climate justice movement in the Global North that you have studied.

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(ii) State **one** demand that the movement you identified in part **(i)** is trying to achieve.

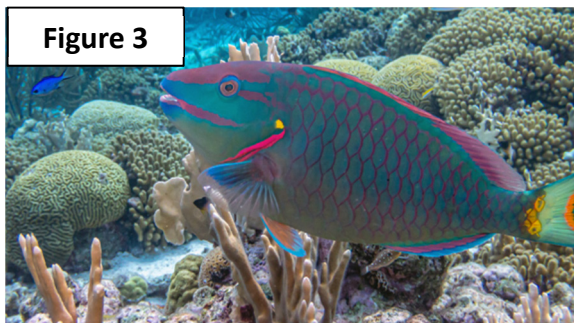
(i) Historical testimony is one example of data that is used as evidence for human-induced global warming.

List **three** other examples of data that are used as evidence for human-induced global warming.

1.
2.
3.

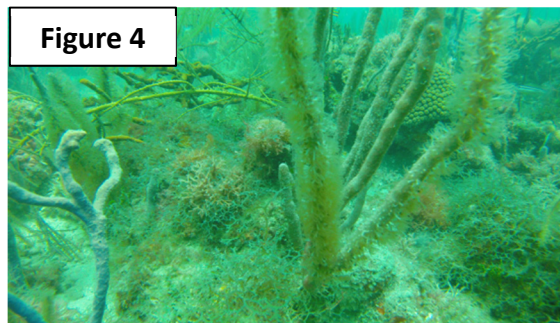
- (j) Study **Figure 3** and **Figure 4** below which show an example of how ecosystems can change and answer the questions that follow.

Figure 3



Fish graze on the algae and microbes on the surface of the corals, allowing the corals access to space, light and nutrients to grow, resulting in a healthy coral reef.

Figure 4



Overfishing causes fish populations to decline; the coral reef becomes overrun by algae growth; the corals die and the fish population declines further.

- (i) What Earth system is being referred to in the information above?
Tick (✓) the correct box.

Biosphere ☐

Geosphere ☐

Atmosphere ☐

Cryosphere ☐

- (ii) State **one** way that the biodiversity of the coral reef ecosystem shown in **Figure 4** above is different from the coral reef ecosystem shown in **Figure 3**.

Answer any **four** questions in this section. Each question carries 40 marks.

Question 2

(40 marks)

(a) Examine the diagram in **Figure 5** below and answer the questions that follow.

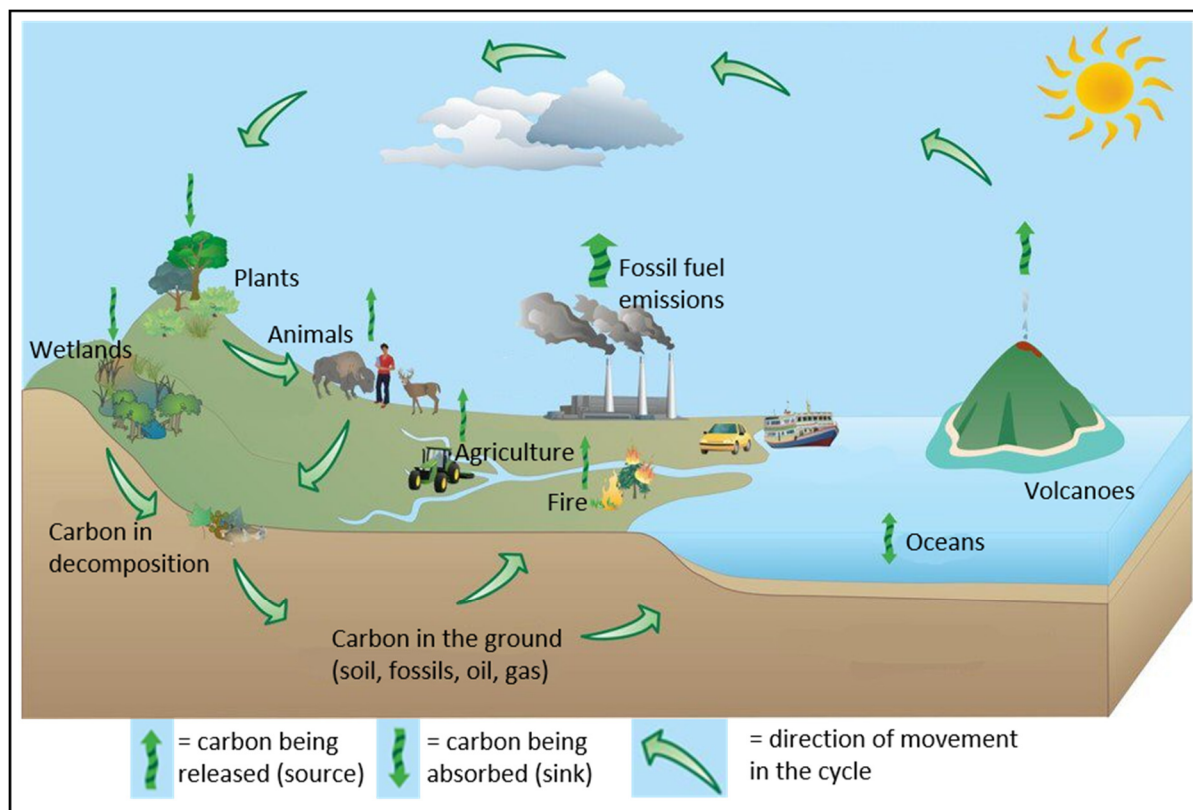


Figure 5

(i) Identify the cycle shown in the diagram in **Figure 5**.

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(ii) List **two** carbon sinks shown in **Figure 5**.

1.
2.

- (iii) Explain how **one** of the carbon sources labelled on the diagram in **Figure 5** releases carbon into the atmosphere.

- (b) Explain **one** way each of the following activities are causing the enhanced greenhouse effect.

- Transport
- Land-use change
- Technology

Transport:
Land-use change:
Technology:

- (c) Examine **one** challenge of achieving a just transition for the agriculture sector in Ireland **and** suggest an approach to overcome this challenge.



Question 3

(40 marks)

- (a) Study the infographic in **Figure 6** below which shows information about nature-based solutions relating to ocean and coastal ecosystems and answer the questions that follow.

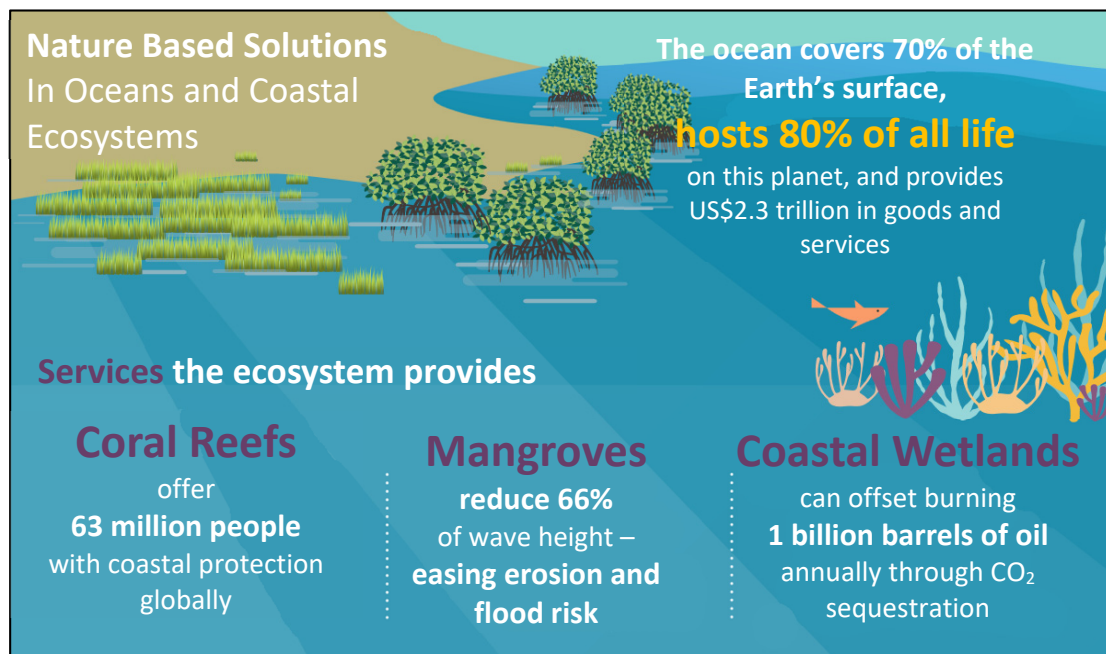


Figure 6

- (i) According to the infographic in **Figure 6**, what is the benefit of mangroves in a coastal ecosystem?

- (ii) Explain, using an example, how **any** ecosystem can sequester carbon dioxide.

(b) When working on the applied learning tasks you developed your facilitation skills. Each of the following questions relates to those facilitation skills.

(i) What is meant by *facilitation* of a discussion or meeting?

Twenty people in your community, from a broad range of socio-economic and cultural backgrounds, have agreed to participate in a discussion to explore a collective vision for the future of the community. You have been tasked with planning and facilitating the discussion.

(ii) Identify **three** factors that you must consider when planning the meeting to minimise possible barriers to participation.

1.
2.
3.

(c) (i) Name an example of a national policy decision made in Ireland that has an impact on the environment.

--

(ii) Examine how cultural factors influenced this policy.

Question 4

(40 marks)

Read the extract below from Oxfam's Equality report and answer the questions that follow.

Oxfam's Climate Equality Report, 2019

Burning down the road to catastrophe, the vast carbon emissions of the world's richest people.

The super-rich 1% are key to the climate story in three ways:

1. through the carbon they emit in their daily lives from consumption, including from their yachts, private jets and lavish lifestyles;
2. through their investments and shareholdings in heavily polluting industries and their vested financial interest in the economic status quo; and
3. through the undue influence they have over the media, the economy and politics.

Inequality of Impact

More than 91% of deaths caused by climate-related disasters of the past 50 years occurred in the Global South. The death toll from floods is seven times higher in the most unequal countries compared to more equal countries. Just as there is extreme inequality in who is responsible for today's climate crisis, there is vast inequality in how its impacts are felt.



- (a) List **two** examples from the extract above of how the super-rich emit carbon other than through consumption.

1.
2.

- (b) Examine why people in the Global South are more vulnerable to the impacts of climate change. Refer to an example from the Global South in your answer.

- (c) Explain how **one** innovative community in Ireland is adapting to the effects of climate change.

Innovative community in Ireland:
How that community is adapting to the effects of climate change:

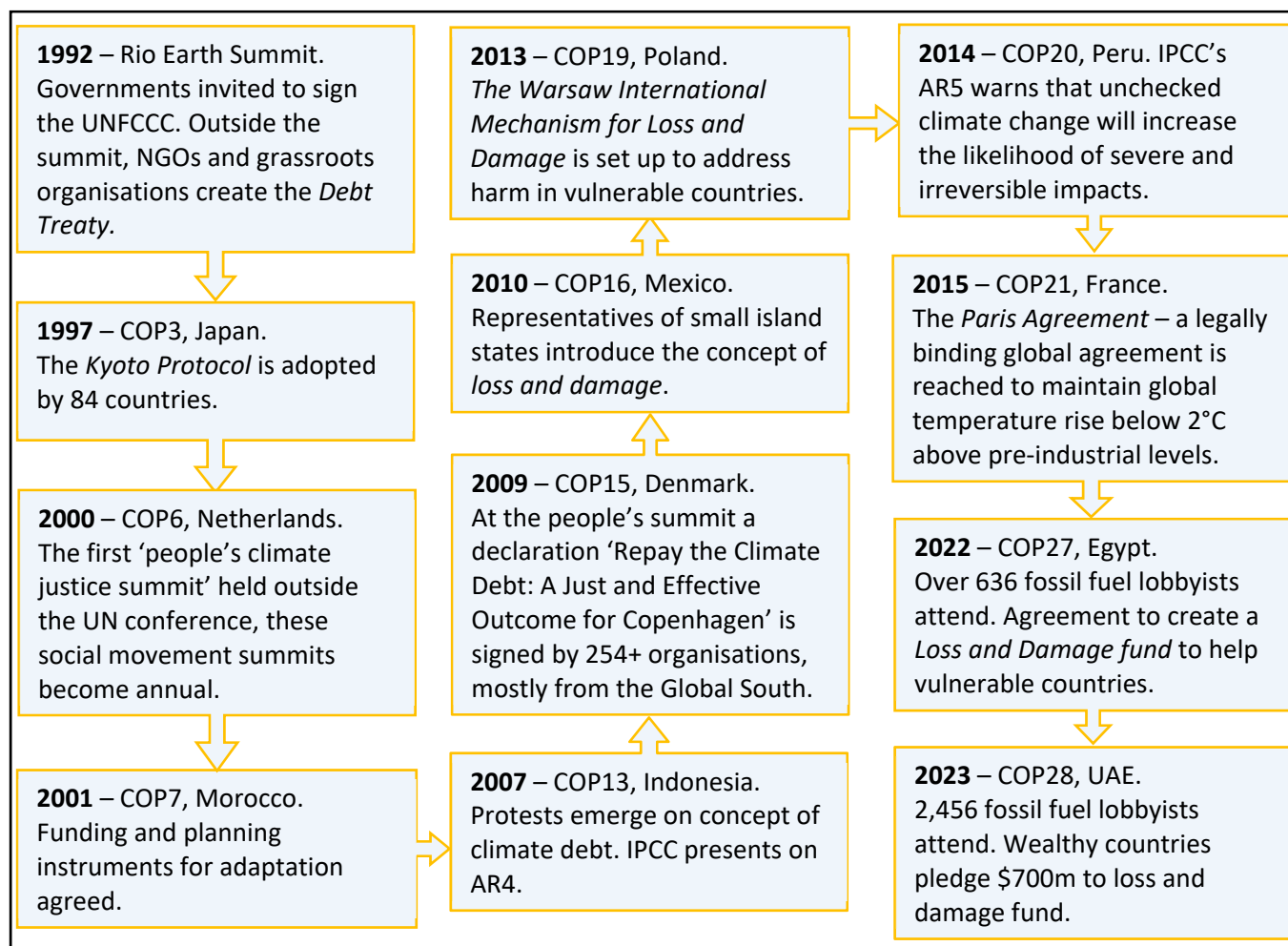
- (d) When economic inequality intersects with inequality based on ethnicity, people's capacity to respond to climate change can be reduced.

Explain why this is the case.

Question 5

(40 marks)

Study the timeline below which gives information on some of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) meetings and answer the questions that follow.



- (a) Using the timeline above, identify **three** bodies or groups that have influenced the development of the international commitments which have been made at various COPs.

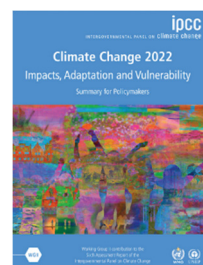
1.
2.
3.

(b) Explain briefly what is meant by each of the following terms:

- Ecological debt
- Climate debt.

Ecological debt:
Climate debt:

(c) In 2022, the IPCC released its sixth assessment report, which for the first time cited 'historical and ongoing patterns of inequity such as colonialism' as contributing to climate injustice.
Explain **one** example of where colonialism contributes to climate injustice.



- (d) Explain why it is important that wealthy countries pay into funds that countries from the Global South can access for climate adaptation and mitigation.

- (e) Discuss **one** example of how policy in Ireland has been changed by international commitments to reducing greenhouse gas emissions made as part of the UNFCCC COP meetings.



Question 6

(40 mark)

- (a)** Study the photo of an ecosystem in **Figure 7** below and answer the questions that follow.



Figure 7

- (i)** Suggest **one** environmental factor you could study in the ecosystem in the photo in **Figure 7**.

--

- (ii)** Describe briefly **one** suitable method of gathering primary data in this ecosystem.

- (iii) Explain how you would ensure accuracy when gathering data in an ecosystem.

- (b) In the course of your studies you investigated the impact of an environmental factor on a chosen local ecosystem. Answer the questions below about your investigation.

- (i) Identify the local ecosystem that you studied.

--

- (ii) State the environmental factor that you selected.

- (iii) Describe and explain **one** overall conclusion you reached as a result of your investigation.

- (c) Examine, using an example(s) you have studied, how water efficiency can contribute to decarbonising an economy.



Section C

80 marks

The questions in this section require an answer in the form of an essay.

Answer **one** question in this section. Each question carries 80 marks.

Question 7

(80 marks)

Sustainable development, as embodied in the Sustainable Development Goals (SDGs), is an effective way of achieving global sustainability.

To what extent do you agree with this statement?
Justify your answer.

Your answer should include:

- an understanding of the origins of the concept of sustainability
- critiques of development and sustainable development
- considerations of planetary boundaries and climate justice
- how capitalism and one other economic approach relate to sustainability.



Or

Question 8

(80 marks)

The values and worldview of producers of media have a large influence on public attitudes to issues related to climate change and climate justice and this is a problem.

Discuss this statement using examples of different forms of media that you have studied.

In your answer include the following:

- how an issue(s) you have studied is communicated to the public in different ways by different sources of media
- consideration of imbalances between people who create media and people who consume media in terms of power, wealth and capacity for action
- consideration of the effectiveness of the controls on media to ensure accurate reporting of climate justice issues
- justified conclusion as to whether there is a problem with how issues like the one(s) you studied are reported across different forms of media.



Tick (✓) the relevant box to indicate which question from **Section C** you are answering.

Question 7 ☐

Question 8 ☐

Use this space for planning/roughwork.

Tick (✓) the relevant box to indicate which question from **Section C** you are answering.

Question 7 ☐

Question 8 ☐

[illegible]

Acknowledgements

Images

Image on page 3: https://world101.cfr.org/sites/default/files/images/photo/2018/03/climate-change_greenhouse-effect_steps.png

Images on page 8 : <https://wwflpr.awsassets.panda.org/downloads/2024-living-planet-report-a-system-in-peril.pdf>

Image on page 9: <https://www.usgs.gov/media/images/usgs-carbon-cycle>

Image on page 11: <https://www.gettyimages.ie/detail/photo/aerial-view-of-irish-rural-scene-on-sunny-summer-royalty-free-image/821598590>

Image on page 12: <https://www.unepfi.org/wordpress/wp-content/uploads/2023/05/Nbs-Ocean-Infographic-Complete-3.pdf>

Image on page 14: Image: <https://policy-practice.oxfam.org/resources/climate-equality-a-planet-for-the-99-621551/>

Image on page 17: <https://www.ipcc.ch/report/ar6/wg2/resources/credits/>

Image on page 18: <https://www.climate-chance.org/en/framework-recognition-accountability-non-state-actors/>

Image on page 19: <https://visitwicklow.ie/listing/glen-of-the-downs-nature-reserve/>

Image on page 21: https://www.freepik.com/premium-ai-image/water-drop-hand-against-natural-background-save-water-concept-world-water-day-conserving-environment-terms-water-resources_316894543.htm

Images on page 22: <https://www.globalgoals.org/resources-new/>; <https://www.linkedin.com/pulse/mastering-media-landscape-key-steps-effective-naif-al-sofyani/>

Texts

Data on page 5: <https://gml.noaa.gov/ccgg/trends/data.html>

Article on page 14: <https://www.oxfam.org.uk/oxfam-in-action/oxfam-blog/climate-equality-a-planet-for-the-99/>

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Leaving Certificate Examination – Higher Level

Climate Action and Sustainable Development

Sample 2

2 hours 30 minutes