

University of Nottingham Ningbo China

CENTRE FOR ENGLISH LANGUAGE EDUCATION

PRELIMINARY YEAR, SEMESTER ONE, 2024-25

READING AND WRITING IN ACADEMIC CONTEXTS
END-OF-SEMESTER MOCK EXAM

Time allowed: TWO Hours

Candidates must write their ID number on the Answer Booklet, code their ID number on the MCQ Answer Sheet, and complete their attendance card.

Do NOT open the examination paper until told to do so.

This exam consists of TWO PARTS:

- **Part 1 - Reading Comprehension (35%)**
- **Part 2 - The Essay (65%)**

No dictionaries or electronic devices are allowed in this exam.

All the answers for Part 1 (Reading Comprehension) must be entered on the MCQ Answer Sheet.

Part 2 (The Essay) must be written in the Answer Booklet.

INFORMATION FOR INVIGILATORS:

A 15-minute warning should be given before the end of the exam.

Please collect the Exam Paper, MCQ Answer Sheet and Answer Booklet after the exam.

Please return Answer Booklets in ID order.

INPUT TEXT 1

From Green Revolution to Green Future: Balancing Agricultural Growth and Environmental Health

1. _____

Throughout history, the impact of food production on the environment has evolved significantly. In ancient times, subsistence farming predominated. This was a time when food was produced primarily by the people who were going to eat it. However, with the arrival of mechanisation and industrialisation in the 18th and 19th centuries, agricultural practices underwent a dramatic shift leading to commercial farming models. This transformation accelerated in the mid-20th century with the Green Revolution, which introduced high-yielding crop varieties, fertilisers (substances added to soil or plants to improve their growth and health) and pesticides (substances used to protect crops and livestock from harmful agents such as insects and disease). These innovations led to a huge increase in food production that has had a serious impact on land use. Statistics reveal the magnitude of **these changes**: between 1700 and 1960, global agricultural land use increased by approximately 600%, while from 1960 to 2015, it nearly doubled again, reaching about 38% of the Earth's land surface. Such changes have had a profound impact on the planet's ecosystems and have brought about a number of serious environmental consequences, including water depletion and air pollution.

2. _____

The intensive farming practices associated with food production have significantly contributed to water depletion worldwide. Agriculture is the largest consumer of freshwater globally, accounting for approximately 70% of total freshwater usage. One of the significant **reasons for this** is that modern farming methods require irrigation systems to deliver water directly to plants through methods such as surface irrigation (flooding fields with water) or sprinkler irrigation (spraying water over crops). In certain situations, these techniques can have devastating consequences. For example, in some parts of water-stressed regions such as Punjab, India, groundwater levels have dropped by several meters over the past few decades. The **depletion** of groundwater in Punjab has had profound implications for agricultural productivity and sustainability. Farmers have been

forced to deepen their wells or install more powerful pumps to access water, increasing energy costs and exacerbating environmental pressures. Likewise, the Zhangye Basin, in Gansu Province, China, has faced significant water stress and depletion of its water resources because of the irrigation needed to supply the water-intensive crops. In some areas, groundwater levels have dropped by more than 50 meters over the past few decades, much more than can be naturally replaced.

3. _____

The overexploitation of water for irrigation can cause further consequences extending far beyond immediate water shortage issues. In response to declining water resources, farmers often resort to cultivating less water-intensive crops or altering farming patterns, which can affect local economies and food security. For example, changes in farming patterns may lead to reduced demand for labour, affecting employment opportunities in rural areas dependent on agriculture. Moreover, the reduction in water availability contributes to increased salt levels in the soil, leading to land turning into desert, as agricultural lands lose fertility and become less productive. As rivers and lakes diminish due to excessive water extraction, ecosystems dependent on these water bodies, such as wetlands, face severe drying conditions. This can lead to the loss of crucial biodiversity, affecting species that rely on these habitats for breeding, nesting, and feeding. The depletion of water also disrupts natural water cycles, influencing regional weather systems and potentially leading to local climate changes including more frequent and severe droughts (lack of rainfall).

4. _____

The global water depletion crisis is also worsened by livestock practices because it takes thousands of litres of water to produce just one kilogram of meat. Livestock farming, particularly intensive operations like **concentrated** animal feeding operations (CAFOs), is one of the main contributors to water depletion in certain regions. CAFOs are agricultural meat, dairy or egg facilities where large numbers of animals are kept and raised. These facilities have a high water demand due to the amount needed to provide drinking water for animals and for facility maintenance such as cleaning and cooling. This demand can **strain** local water supplies, particularly in regions with little rainfall or with limited access to

freshwater resources. To address this issue, some CAFOs have adopted water recycling technologies to treat and reuse wastewater generated within the facility. Such systems can purify wastewater from cleaning processes or animal waste lagoons to a level where **it can be safely reused** for non-drinking purposes like irrigation or cleaning.

5. Environmental Impact of Agricultural Emissions

Food production also significantly influences air pollution through processes such as livestock farming, fertilizer use, and transportation. Air pollution from livestock farming arises primarily from methane (CH₄) and ammonia (NH₃) emissions. Methane, a potent greenhouse gas, is generated within the bodies of animals such as cows and sheep, contributing up to 14.5% of methane emissions. This process occurs as the food is broken down in the rumen (first stomach), releasing methane as a by-product. For example, a dairy farm with a large herd of cattle can significantly contribute to methane emissions due to the digestive processes of the cows. Ammonia emissions, on the other hand, are caused mainly by the decomposition of animal urine through microbial activity that breaks down nitrogen-containing compounds in the urine. In intensive farming operations like chicken farms, ammonia emission levels can be particularly high because many birds are crowded into a small area. Moreover, the use of nitrogen-based fertilizers in agriculture releases nitrous oxide (N₂O), another potent greenhouse gas, into the atmosphere, further worsening climate change and air pollution.

6. Food Miles

The transportation and distribution of food products also contribute to air pollution, primarily through vehicle emissions. The long-distance transportation of food items, especially goods such as fruits and vegetables, often involves trucks, ships, and airplanes that burn fossil fuels, releasing pollutants such as nitrogen oxides and particulate matter into the atmosphere. In fact, food transportation accounts for approximately 11% of global greenhouse gas emissions associated with the food supply chain. Additionally, emissions from refrigeration units used during transportation and storage also contribute to air pollution. Overall, reducing the environmental impact of food production on air quality requires sustainable farming practices and improved transportation logistics. One solution to reduce air pollution caused by food distribution could be to encourage consumers to eat foods

produced locally and in season. When consumers choose fruits, vegetables, and other foods that are currently being harvested nearby, it significantly reduces the food miles from field to kitchen.

(Word Count: 1065)

PART 1: READING COMPREHENSION (35%)

Answers to the questions below can be found in **Input Text 1**.
All Part 1 answers MUST be entered on the MCQ Answer Sheet.

Reading for main ideas

Questions 1-4

For each of the **paragraphs 1-4**, choose the **best** heading from the choices below (**A-D**).

1. _____	A. Challenges in Water Use for Animal Agriculture
2. _____	B. A Complex Causal Chain
3. _____	C. Revolutionising Farming: The Shift in Agricultural Practices
4. _____	D. Global Challenges in Water Resource Management

(4)

Reading for detail

5. According to **paragraph 5**, Methane (CH₄), Ammonia (NH₃) and Nitrous Oxide (N₂O) are the main gases released by the animals.

- A. TRUE *if the statement agrees with the information*
 B. FALSE *if the statement contradicts the information*
 C. NOT GIVEN *if there is no information on this* (1)

6. According to **paragraph 6**, the transportation of fruits and vegetables as well as the use of refrigeration units contributes to air pollution.

- A. TRUE *if the statement agrees with the information*
 B. FALSE *if the statement contradicts the information*
 C. NOT GIVEN *if there is no information on this* (1)

Inferencing

For questions 7-8, choose the **best** option.

7. Based on the content of **paragraph 2**, what inference can be made about the consequences of irrigation?

- A. Irrigation is responsible for 70% of global freshwater use.
- B. Unless action is taken, groundwater levels will likely continue to decline in water-stressed regions.
- C. Deepening wells and using more powerful pumps can solve the problems of groundwater reductions.
- D. China and India have found effective methods to solve water shortages.

(2)

8. Based on the content of **paragraph 3**, what inference can be made about the further consequences of water depletion?

- A. Wetlands are needed to supply further irrigation to protect biodiversity.
- B. There are much more important issues than water to consider.
- C. Water depletion results in a range of socio-economic and environmental impacts.
- D. Species that need high salt levels in the soil are at risk.

(2)

Vocabulary: guessing meaning from context

9. Choose the **best** synonym for the word **depletion** in **paragraph 2**:

- A. improvement
- B. reduction
- C. pollution
- D. poisoning

(1)

10. Choose the **best** synonym for the word **concentrated** in **paragraph 4**:

- A. expensive
- B. crowded
- C. complicated
- D. free

(1)

11. Choose the **best** synonym for the word **strain** in **paragraph 4**:

- A. pollute
- B. highlight
- C. weaken
- D. support

(1)

Cohesion: links across text

For questions 12-14, choose the **best** option.

12. What does **these changes** refer to in **paragraph 1**?

- A. the arrival of mechanisation
- B. fertilisers
- C. pesticides
- D. all of the above

(1)

13. What does **this** in '**reasons for this**' refer to in **paragraph 2**?

- A. agriculture covering 70% of land surface
- B. irrigation systems delivering water
- C. agriculture using significant amounts of fresh water
- D. intensive farming practices creating new water

(1)

14. What does **it** in '**it can be safely reused**' refer to in **paragraph 4**?

- A. the facility
- B. wastewater
- C. irrigation
- D. animal waste

(1)

Paraphrasing: keeping the same meaning

15. The following sentence is underlined in **paragraph 3** of Input Text 1:

'In response to declining water resources, farmers often resort to cultivating less water-intensive crops or altering farming patterns, which can affect local economies and food security.'

Choose the **best** paraphrase from the options A-D below. Only **one** option does **not** change the meaning in some way.

- A. As water resources decrease, farmers often adjust their crop choices and planting methods to prioritize less water-intensive options, potentially influencing local economies and food security.
- B. As water resources decrease, farmers often incorrectly assume that switching to less water-intensive crops or altering farming patterns will solve local economic challenges and ensure food security.
- C. Due to the decreasing availability of water resources, farmers frequently switch to growing less water-intensive crops or modifying their planting methods, which always leads to negative impacts on local economies and food security.
- D. Due to the increasing availability of water, farmers often choose to grow crops that require less water or change their planting methods, which can protect local economies and food security. (2)

16. The following sentence is underlined in **paragraph 6** of Input Text 1:

'The long-distance transportation of food items, especially goods such as fruits and vegetables, often involves trucks, ships, and airplanes that burn fossil fuels, releasing pollutants such as nitrogen oxides and particulate matter into the atmosphere.'

Choose the **best** paraphrase from the options A-D below. Only **one** option does **not** change the meaning in some way.

- A. Nitrogen oxides and particulate matter are released into the atmosphere by the large amount of fresh fruit and vegetables found in long-distance transportation.
- B. A range of pollutants are released into the atmosphere due to the transportation of food over long distances.
- C. The long-distance transportation of food items, especially goods such as fruits and vegetables, involves vehicles that do not emit any pollutants.
- D. The range of transportation methods used to move fruit and vegetables locally is a major contribution to air pollution. (2)

INPUT TEXT 2

From forests to fields: The environmental cost of agricultural expansion

The pursuit of agricultural expansion has triggered an ecological crisis. The systematic clearance of forests, known as deforestation, has emerged as a leading driver of global environmental damage. With alarming speed, vast amounts of forest are being felled each year for the purpose of creating farmland. The consequences extend across ecosystems, harming biodiversity, worsening climate change, and threatening the livelihoods of millions of people dependent on forests for food and shelter. Between 1990 and 2020, the world lost over 420 million hectares of forest—an area roughly forty times the size of Zhejiang Province. From the Amazon rainforest to the Congo Basin, from Southeast Asia to boreal forests in Russia and Canada, no corner of the Earth is untouched by deforestation.

One significant disruption caused by deforestation is habitat loss, whereby the removal of trees and vegetation eliminates the natural homes of numerous plant and animal species, pushing many to become endangered. For instance, the orangutan populations in both Borneo and Sumatra have dramatically declined due to habitat loss caused by palm oil plantations. The loss of habitat not only reduces the available space for apes like orangutans but also divides their populations, making it difficult for them to reproduce. Additionally, orangutans often come into conflict with plantation workers and are sometimes killed or injured. Between 1999 and 2015 alone, the population of Bornean orangutans declined by more than 50%, while the population of Sumatran orangutans decreased by approximately 80% over the past century.

Loss of habitat can lead to the further fragmentation of ecosystems. One specific example of this complex effect is the relationship within the fig tree ecosystem. Fig trees are important species in many tropical ecosystems, providing food and shelter for a diverse range of wildlife. These trees rely on tiny insects called fig wasps for pollination (the process of transferring pollen from one flower to another,

helping plants make seeds). Female fig wasps enter the fig fruit to lay their eggs and pollinate the flowers inside. After pollination, they die within the fig, and their offspring develop inside the fig's fruit. Once mature, the wasp offspring emerge and collect pollen from the fig's flowers before flying off to seek out new figs to reproduce in, thereby completing the cycle. When fig trees are cut down, fig wasps and many other animals that depend on them suffer from habitat loss, further disturbing the ecosystem. This is just one example among many natural systems that are disrupted by deforestation.

Expanding agricultural land not only causes deforestation that affects biodiversity but can also lead to other environmental consequences such as the reduction of soil quality. Increasing the area for cattle such as cows to graze can have serious effects on soil quality. In large cattle farms, the repeated walking over the ground pushes the soil together so that it becomes very compact. This reduces its ability to absorb water and nutrients and can stop new roots from growing. If the farm is of a significant size, then overgrazing can also occur which can lead to the cattle removing vegetation cover either by eating it or walking on it. This can expose the soil to wind and water erosion which can lead to the loss of valuable topsoil and soil fertility. One notable example of soil erosion due to overgrazing is seen in parts of Inner Mongolia, China. This region, known for its vast grasslands, has experienced significant damage due to overgrazing by livestock, particularly sheep and goats. The traditional farming methods practiced by local farmers have intensified in recent years due to population growth and increasing demand for meat and wool. As a result, livestock numbers have significantly increased, placing immense pressure on the fragile grassland ecosystems and in some areas, leading to the land becoming desert.

Similarly, monoculture food production, the cultivation of a single crop species over large expanses of land, can have profoundly negative influences on soil quality. Different plant species have different nutrient requirements, and when the same crop is grown continuously in the same area, it often depletes specific nutrients from the soil, leading to imbalances and deficiencies. For example, crops like corn or wheat may deplete the soil of nitrogen, phosphorus, or potassium,

which are essential for plant growth. Without the time to replenish itself, the soil becomes increasingly depleted of these vital nutrients.

Many farmers realise the dangers of monoculture farming and practice crop rotation instead. Crop rotation involves changing the types of plants grown in a field from year to year. By rotating crops with different nutrient needs and root lengths, farmers can effectively replenish soil nutrients and improve soil structure. However, this method can still lead to environmental consequences. In some crop rotations, two water-intensive crops are grown one after the other, leading to increased water demand in areas where water resources are limited. This can put pressure on local water sources, especially in regions prone to drought.

(Word Count: 829)

PART 2: ESSAY QUESTION (65%)

'Explain two impacts of food production on the environment.'

You **must** refer to **Input Texts 1** and **2**.

Write approximately 400 words in the Answer Booklet

Ideas taken from the texts should be paraphrased.

Note: You are not required to paraphrase fixed expressions such as 'biodiversity' or 'ecosystems'.