INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in Section A, and any **THREE** questions in Section B

Use illustrations where appropriate. A simple calculator required during this examination. Borrowing of any materials from other candidates is strictly not allowed.

SECTION A (COMPULSORY)
Question One
(a) Using an example explain what constitutes a climate change **(3 marks)**

(b) Describe two micro-scale ecosystems **(4 marks)**

(c) Write short notes on any three of the following;

i.	Green house gases	**(2 marks)**
ii.	Vulnerability to climate change	**(2 marks)**
iii.	Biotic factors	**(2 marks)**
iv.	Negative feedback	**(2 marks)**
v.	Ecosystem services	**(2 marks)**

(d) What is the role of the IPCC? **(2 marks)**

(e) Describe seven initiatives that should be urgently undertaken by the residents in the hypothetical lake basin described below.

"The lake that was 15 metres deep and but it now stands at a pale 3 metres. It supplies water to the 60,000 residents. It has been shrinking during the past few years. Estimates put the current population of cattle around the lake as over 100,000. There also many goats and some wildlife.

Increasing drought conditions have also meant that livestock farmers from neighbouring areas are increasingly settling in areas around the lake. With more livestock there is now more conflict with wildlife in the area, increasing human-wildlife conflict as well as the risk of disease transmission.

Some well-connected individuals had grabbed land close to the banks of the Lake. Human encroachment, and to a larger extent land grabbing is the main cause as to why this lake is drying up fast. Forest cover, now about 3 %, around the lake, both in the immediate and wider catchment areas, has been depleted due to human activities results in increased soil erosion and siltation of the lake.

High demand for water associated with this population influx has seen the sinking of many wells in the area, with more being sunk each month, leading to over-abstraction of water. Domestic water uses, in pit latrines or washing, are also reducing water quality. The salinity of the lake has been increasing, thus reducing the quality of the water. Fishermen have since ceased using boats. They prefer to walk into the lake and picking their fish as the water levels are too shallow to draw out a net. Many farms that have been established and trees have been cleared, with open flooding irrigation is regularly being used. Agro-chemicals are also being used in the farms and these are finding their way into the lake."

[Total 25 marks]

SECTION B (ANSWER ONLY THREE QUESTIONS)

Q2

"Liquid biofuels like Ethanol and Biodiesel, provide a plant-based solution to the growing transport energy needs but their production has too many potential negative impacts on the local ecosystems." Explain this statement.
[15 marks]

Q3

(a) What are carbon credits? **(3 marks)**

(b)Citing some local examples show how this carbon credits projects contribute towards the reduction of the degradation of forest ecosystems.
(12 marks)

Q5

Explain why the restoration of the coastal mangrove forests is essential, not only to secure sustainable livelihoods for the coastal communities, but also to mitigate the effects of climate change. **(15 marks)**

Q6

Describe seven sources of scientific information that give equivocal evidence that the global climate is really changing. **[15 marks]**

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