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Q65

Which of the following statements best describes "carbon fertilization"? (a) Increased plant growth due to increased concentration of carbon dioxide in the atmosphere (b) Increased temperature of Earth due to increased concentration of carbon dioxide in the atmosphere (c) Increased acidity of oceans as a result of increased concentration of carbon dioxide in the atmosphere (d) Adaptation of all living beings on Earth to the climate change brought about by the increased concentration of carbon dioxide in the atmosphere Official key: A.

UPSC Civil Services Prelims 2018 · General Studies · 2 marks · Environment and Ecology

Environment, ecology, climate, biodiversity - Prelims GS Paper I.

Explanation**(a) Official key**

(a) Increased plant growth due to increased concentration of carbon dioxide. Extra atmospheric CO₂ can raise photosynthetic rates and biomass where water and nutrients allow-this is carbon (or CO₂) fertilisation. That is the definition asked. This option is the official key.

(b)

(b) Increased temperature of Earth due to increased CO₂. That is the greenhouse / global-warming effect, not the fertilisation metaphor. This option is not the key.

(c)

(c) Increased acidity of oceans from extra CO₂. That is **ocean acidification** (lower pH, carbonate chemistry), a different CO₂ impact. This option is not the key.

(d)

(d) Adaptation of all living beings to climate change from extra CO₂. That overstates both adaptation and the meaning of the term. This option is not the key.

Summary

Official key is (a). Carbon fertilisation means plants, as a class, can grow more when the air is richer in CO₂, the substrate of **photosynthesis**. Greenhouse warming, **ocean acidification**, and a blanket "all beings adapt" story are real or rhetorical neighbours, not that term. The stored letter therefore names increased plant growth. Options (b), (c) and (d) describe other CO₂ pathways.

Related possible facts

These can be asked in a future Prelims paper.

Photosynthesis

$\text{CO}_2 + \text{H}_2\text{O} \rightarrow \text{sugars}$; C3 plants often show stronger fertilisation

C3 vs C4

C4 crops (maize, sugarcane) are already CO_2 -concentrating

Ocean acidification

$\text{CO}_2 + \text{seawater} \rightarrow \text{carbonic acid}$; threat to calcifiers

Keeling Curve

Mauna Loa record of rising atmospheric CO_2

Nutrient limit

N and P scarcity can cap the fertilisation effect

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<https://wrapexams.com/upsc/prelims/gs/2018/which-of-the-following-statements-best-describes-carbon-fertilization/> ·
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