

Edexcel (A) Biology A-level

5.12 to 5.15 + 5.20 to 5.22 -

Climate Change

Flashcards

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Describe 4 pieces of evidence for climate change.



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- Records show increasing levels of CO₂, a greenhouse gas.
- Changing patterns in temperature records.
- Analysis of pollen grains from peat bogs indicates which plant species were present when the peat formed.
- Dendrochronology.



What is dendrochronology?



What is dendrochronology?

A new tree ring is added each year due to the growth of cambium cells. Width of ring indicates the temperature & moisture of that year.



What is anthropogenic climate change?



What is anthropogenic climate change?

Changes in meteorological conditions caused by human activity e.g. deforestation, burning fossil fuels, intensive agriculture.



What is the greenhouse effect?



What is the greenhouse effect?

Greenhouse gases e.g. carbon dioxide & methane absorb infrared radiation from the Sun. Warms the Earth's surface & atmosphere.



How can models of future climate change be generated?



How can models of future climate change be generated?

Extrapolate data. Models assume the pattern continues & do not consider factors that may change later e.g. reduction in greenhouse gas emissions.



State 2 geological effects of climate change.



State 2 geological effects of climate change.

- rainfall patterns change
- seasonal cycles change



How can climate change affect plants and animals?



How can climate change affect plants and animals?

Distribution of species & migratory patterns change. Many species move north to cooler areas. Increases interspecific competition.

Selection pressures change. Natural selection may not occur quickly enough in some populations.

Disruption to life cycles & development e.g. sex of reptiles.



Suggest 2 controversial scientific issues surrounding climate change.



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- What should be done to reduce climate change?
- To what extent are human actions responsible for climate change?



Why might scientific conclusions on controversial issues differ?



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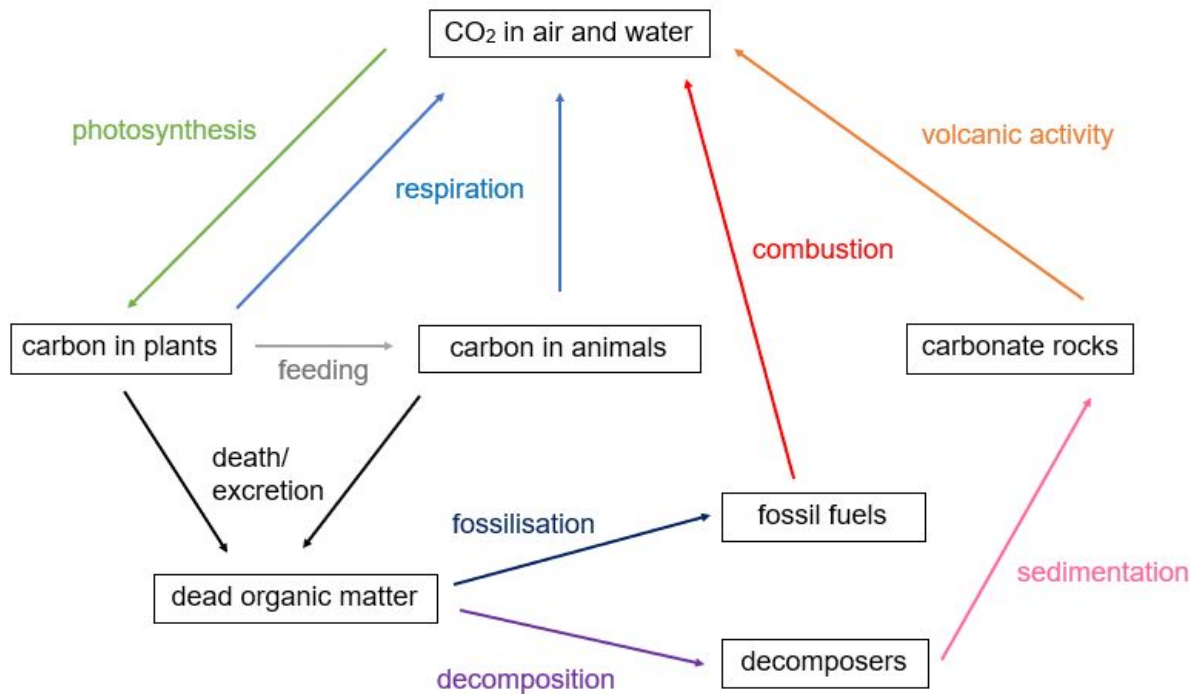
- May require suggestions rather than empirical fact.
- Depends on intention of researcher - subconscious bias or pressure from an institution.



Outline the processes in the carbon cycle.



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How can knowledge of the carbon cycle be used to reduce atmospheric carbon dioxide levels?



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- Increase photosynthetic absorption of CO_2 = reforestation.
- Reduce CO_2 release = burn fewer fossil fuels.



How can human needs be balanced with conservation?



How can human needs be balanced with conservation?

- Use renewable energy sources.
- Reforestation.
- Grow crops to use as carbon neutral biofuels.



Define 'carbon neutral'.



Define 'carbon neutral'.

Process does not cause a net change in atmospheric CO₂ levels.



State the main way temperature changes affect living organisms.



State the main way temperature changes affect living organisms.

Affect rate of enzyme-controlled metabolic reactions, including primary production during photosynthesis.
Greater effect on ectotherms.



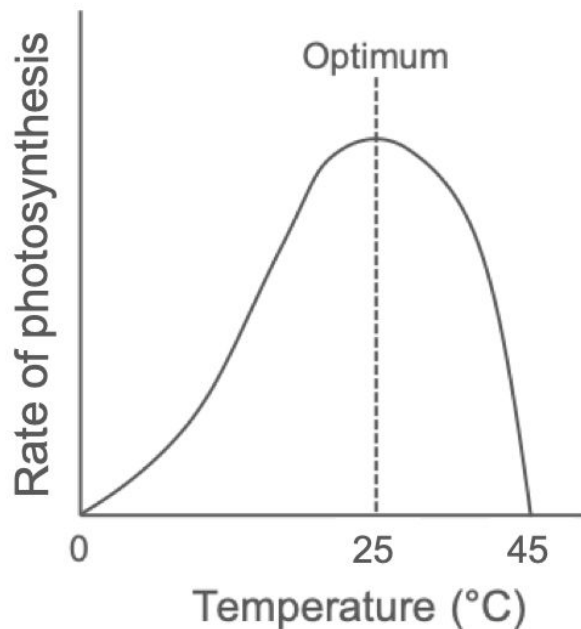
How does temperature affect enzyme activity?



How does temperature affect enzyme activity?

Rate increases as kinetic energy increases & peaks at optimum temperature.

Above optimum, ionic & H-bonds in tertiary structure break = active site no longer complementary to substrate (denaturation).



What is Q_{10} ?



What is Q_{10} ?

Temperature coefficient. Measures the rate of change of a reaction when temperature is increased by 10°C .

