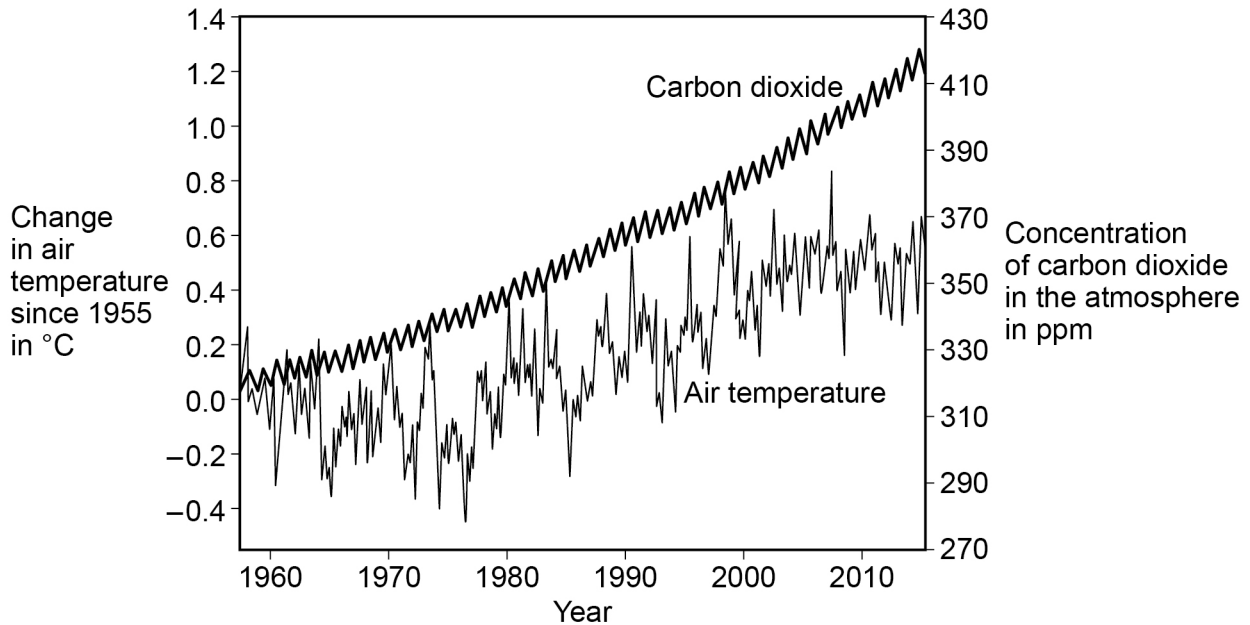


0 2

Many scientists think that global air temperature is related to the concentration of carbon dioxide in the atmosphere.

Figure 3 shows changes in global air temperature and changes in the concentration of carbon dioxide in the atmosphere.

Figure 3



0 2 . 1

Complete **Table 1**.

Use information from **Figure 3**.

[2 marks]

Choose answers from the box.

You may use each answer once, more than once or not at all.

constant	decreasing	increasing
-----------------	-------------------	-------------------

Table 1

	1960 – 1977	1977 – 2003	2003 – 2015
Trend in carbon dioxide concentration	Increasing		
Trend in air temperature			



Many scientists think that an increase in carbon dioxide concentration in the atmosphere causes an increase in air temperature.

0 2 . 2

How would an increase in the concentration of carbon dioxide in the atmosphere cause an increase in air temperature?

[1 mark]

0 2 . 3

Evaluate evidence for and against the theory that an increase in the concentration of carbon dioxide in the atmosphere causes an increase in air temperature.

Use data from **Figure 3** and your own knowledge.

[4 marks]

Turn over ►



In each year, the concentration of carbon dioxide in the atmosphere is higher in the winter than in the summer.

0 2 . 4

Give **one** human activity that could cause the higher concentration of carbon dioxide in the winter.

[1 mark]

0 2 . 5

Give **one** biological process that could cause the lower concentration of carbon dioxide in the summer.

[1 mark]

0 2 . 6

Give **two** possible effects of an increase in global air temperature on living organisms.

[2 marks]

1 _____

2 _____



Question	Answers	Extra information			Mark	AO / Spec. Ref.
02.1		1960–1977	1977–2003	2003–2015	1	AO3 4.7.3.5
	trend in carbon dioxide concentration		increasing	increasing		
	trend in air temperature	decreasing	increasing	constant / decreasing	1	
allow synonyms eg level / goes up / goes down						
02.2	traps heat / energy or (long-wavelength / IR) radiation or less loss of heat or insulates	do not accept light / UV allow stops (some) heat escaping do not accept stops all heat escaping ignore greenhouse effect ignore reference to ozone layer			1	AO1 4.7.3.5

Question	Answers	Mark	AO / Spec. Ref.	
02.3	Level 2: Some logically linked reasons are given. There may also be a simple judgement.	3–4	AO3 4.7.3.5	
	Level 1: Relevant points are made. They are not logically linked.	1–2		
	No relevant content	0		
	Indicative content for the theory: <ul style="list-style-type: none"> • (overall increased CO₂ parallels) overall increased temperature (eg by 0.4 (°C)) • CO₂ traps (long-wave) radiation / IR / heat against the theory: <ul style="list-style-type: none"> • in some years (eg 1960–1977) temperature falls (while CO₂ is rising) • many (large and small) erratic rises and falls in temperature • overall correlation does not necessarily mean a causal link • other (unknown) factors may be involved in temperature change <p>to access level 2 there must be evidence both for and against the theory and use of data from the graph</p>			
02.4	burning of (fossil) fuels	allow eg coal / oil / gas allow driving cars allow any activity which leads to burning fuels – eg using central heating ignore power stations unqualified ignore burning / fires unqualified ignore deforestation	1	AO2 4.7 4.7.2.2 4.7.3.5
02.5	photosynthesis	allow full description or full equation allow a symbol equation which is not balanced	1	AO2 4.4.1.2 4.7 4.7.2.2 4.7.3.5

Question	Answers	Extra information	Mark	AO / Spec. Ref.
02.6	any two from: <ul style="list-style-type: none"> • (some) plants grow faster / higher yield • loss of habitat • migration • or change in distribution • extinction 	allow points made using examples } if neither is given allow alters biodiversity for 1 mark allow (in terms of extinction) death due to eg lack of water / food or increased disease ignore death unqualified	2	AO1 4.7.3.1 4.7.3.5
Total			11	