Test review – Unit 9 The Atmosphere

Skill Review

S	Skill	Total	R	A	G
1	Greenhouse gases	7	0-2	3-4	5-7
2	The evolution of the atmosphere	6	0-2	3-4	5-6
3	Pollutant gases	9	0-3	4-7	8-9
4	Carbon footprint	6	0-2	3-4	5-6
5	Combustion	3	0-1	2	3

I am able to …

Describe atmospheric processes, eg. the Greenhouse Effect & the way in which the atmosphere has changed over time.

I need to improve …

Reading questions more carefully

Section	Mark	Upgrade questions (to be completed)
1 - Greenhouse gases	6	a) What is the composition of our current atmosphere b) State 3 different greenhouse gases and how these gases are produced. c) Describe how respiration causes an increase in greenhouse gases. d) Explain how photosynthetic organisms help reduce greenhouse gases.
2 - The evolution of the atmosphere	6	a) What process has help reduce the volume of CO_2 and increase the volume of O_2 b) Explain how the earth's atmosphere keep the planet warm. (Use a diagram to help) c) Global warming is a major concern, explain global warming and how humans can help slow the process. d) Describe how to test for carbon dioxide. e) Compare our current atmosphere and the early atmosphere f) What have humans done to increase the levels of CO_2
3 - Pollutant gases	9	a) Explain, including a diagram, why CO_2 is a gas at room temperature. b) Draw a dot and cross diagram to represent O_2. c) Define a strong acid d) Explain how an acid can be both strong and dilute at the same time. e) Explain how the levels of carbon dioxide were reduced
4 - Carbon footprint	6	a) Define a polymer b) Define hydrocarbon cracking c) Why is it important to try and reduce the carbon cost of items?
5 - Combustion	3	a) Draw an energy level diagram/reaction profile for an

	3	exothermic reaction including labels b) Write the general equation for complete and incomplete combustion. c) Burning alkanes releases carbon. Draw Ethane, butane and propane. d) Define an alkene and a homologues series. e) Give 3 examples, and how they function, of how the government reduces carbon emissions.

1) a) ~ 0.04% CO_2
~ 21% O_2
~ 78% N_2
& variable water vapour

b) CO_2 – aerobic respiration, car engines, power stations (ie burning fossil fuels) – although all combustion produces CO_2

CH_4 – via farming in paddy fields & farming cattle & landfill sites

NO_2 – primarily fossil fuel combustion, ie in road traffic

c) Aerobic respiration:

$6O_2 + 6C_6H_{12}O_6 \rightarrow 6CO_2 + 6H_2O + ATP$

Because this reaction consumes O_2, & displaces it with CO_2 (unuseful to allo), this increases the amount of greenhouse gases in the atmosphere.

d) $6CO_2 + 6H_2O \xrightarrow{light} C_6H_{12}O_6 + 6O_2$
(photosynthesis)

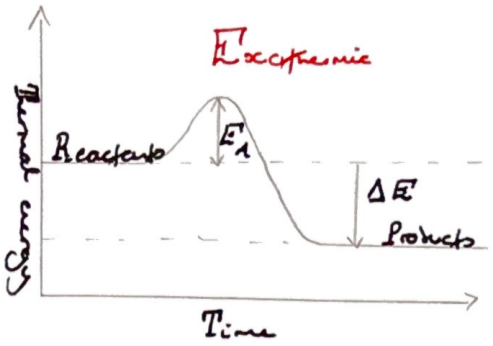
As above, plants produce gases that do not contribute to the Greenhouse Effect, but do use CO_2 (a greenhouse gas).

4) a) Very large molecules with repeating monomers joined by strong covalent bonds. Strong intermolecular forces.

b) large, unsaturated hydrocarbon molecules broken down into smaller hydrocarbon molecules using heat. Reactant is always alkene (C_nH_{2n+2})

c) To reduce the amount of carbon dioxide we emit, contributing to the Greenhouse Effect. This will make the Earth more habitable & sustainable.

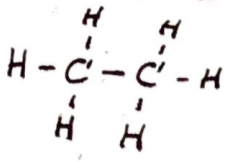
5) a)



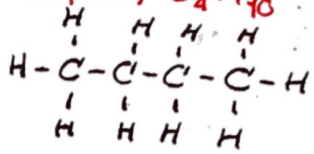
b) hydrocarbon + oxygen → carbon dioxide + water
↑ Complete combustion

hydrocarbon + oxygen → carbon monoxide + carbon + water
↑ Incomplete combustion

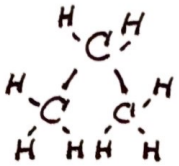
c) Ethane, C_2H_6:



Butane, C_4H_{10}



Propane, C_3H_8:



d) An alkene is a hydrocarbon that contain a carbon-carbon double bond, & the second homologous series.
A homologous series is a family of hydrocarbons, all showing similar properties & with a general formula — for alkenes this is C_nH_{2n} & for alkanes it's C_nH_{2n+2}.

e) (i) Banning the sale of new petrol & diesel cars by 2030, meaning consumer-scale fossil-fuel burning will stop for cars.

(ii) UK's power companies burning fossil fuels are subject to the Carbon Price Floor — taxing at £18/t of CO_2 emitted.

(iii) In the Paris Summit, Britain pledged £11.6bn between 2021/22 & 2025/26 fiscal years in international climate finance.