

Mark Scheme

Combined Science GCSE

Fuels and Earth Science Test

(Levels 4-9)

	Answer	Marks
1. (a)	(a compound) made from hydrogen and carbon only	(1)
1. (b)	• diesel oil (1) • fuel oil (1) in this order only.	(2)
1. (c)	Water vapour: • Condensation • Damp walls • Damage to decoration • Greenhouse gas/traps heat Carbon dioxide: • Greenhouse gas/traps heat • May add to global warming – consequences of global warming considered Carbon: • Soot • Makes things dirty/black • Damage to decoration • Blocks flues • Breathing problems • Causes fires Carbon monoxide: • Toxic • Odour and colour less (silent killer) • Difficult to detect 1-2 marks – limited description of one product 3-4 marks – simple description of one product links the problems caused or simple description of two products 5-6 marks – detailed description of one and limited description of one which both link to problems caused	(6)

	Answer	Marks
1. (d)	(i) Carbon and hydrogen atoms (1) only (1) with all single bonds (1) (ii) D – Stays orange	(3) (1)
1. (e)		(3)

(Total for Question 1 = 16 marks)

	Answer	Marks
2.	Choose from possible answers up to 6 marks Advantages: • Renewable/sustainable • Grow more plants which photosynthesise and remove carbon dioxide • Carbon neutral • Does not use crude oil or non-renewable resources Disadvantages: • Land must be taken up to grow crops instead of used for homes etc • Large amounts of crops needed to produce small amount of bio-fuel • Crops are weather dependent	(6)

(Total for Question 2 = 6 marks)

	Answer	Marks
3. (a)	(i) Water vapour condensed/turned to water must refer to water vapour	(1)
	(ii) (plants) remove/reduce carbon dioxide (1) and increase oxygen (1)	(2)
	(iii) Oxygen is removed (1) and carbon dioxide/water vapour added (1)	(2)
3. (b)	A - Gases from volcanoes	(1)
3. (c)	D - Less than 1%	(1)
3. (d)	Burning fossil fuels/deforestation	(1)
3. (e)	CO ₂	(1)
3. (f)	Pass gas through limewater (1) if it turns cloudy/milky/white then it is present (1)	(2)

(Total for Question 3 = 11 marks)

	Answer	Marks
4. (a)	3 (1) 4 (1) in this order only	(2)
4. (b)	Combines with haemoglobin in the red blood cells (1) and reduces the amount of oxygen around the body (1)	(2)
4. (c)	Cause: acid rain, by Burning sulfur produces sulfur dioxide Escapes into the atmosphere and dissolves in rain water Form acidic solution which falls to the ground as acid rain Effect: acid rain, can Acidify lakes and kill fish Kill trees Damage/erode stonework Reduce damage by Using calcium carbonate from limestone Converts into calcium hydroxide Removes sulfur dioxide 1-2 marks simple idea of acid rain 3-4 marks idea of acid rain and what damage is caused 5-6 marks causes, effect and how to reduce	(6)

(Total for Question 4 = 10 marks)

	Answer	Marks
5. (a)	alkene	(1)
5. (b)	$C_{16}H_{34}$	(1)
5. (c)	(1) for correct structure (1) for double bond <pre> H H \ / C = C / \ H H </pre>	(2)
5. (d)	Link from the table that lots of larger molecules (diesel oil bitumen etc) (1) shortage of petrol/gas (1) need shorter chain molecules (1) short chain molecules more useful (1)	(3)

(Total for Question 5 = 7 marks)

TOTAL FOR PAPER = 50 MARKS