

HYDROCARBONS 3

MARK SCHEME

Q1.

Question	Answer	Extra information	Marks
(a)	complete diagram with 2 carbon atoms and 5 hydrogen atoms each C-C and each C-H linked by a single line (bond)		1
(b)(i)	the greater the number of (carbon) atoms (in an alkane molecule) the greater its boiling point or vice versa	allow as the (carbon) chain gets longer the boiling point increases ignore melting points do not accept reference to greater number of molecules	1
(ii)	any two from: <ul style="list-style-type: none">• low boiling point / volatile• low viscosity• high flammability• small molecules • burn completely	they = hydrocarbons from the graph it = C ₃₀ H ₆₂ accept they are gases or liquids accept easier to burn / ignite accept short chains ignore number of carbon atoms ignore speed of burning	2
Total marks			4

Q2.

Question	Answer	Extra information	Marks
(i)	any one from: <ul style="list-style-type: none">• have a higher melting point than (vegetable) oil• are solid at (room temperature) / hardened / harder	accept useful as spreads or doesn't soak into bread ignore hard / soft(er)	1
(ii)	any two from: <ul style="list-style-type: none">• hydrogen added	do not accept 'water'	2

	<ul style="list-style-type: none"> • to carbon carbon double bond / to saturate • (nickel) catalyst / temperature 60 - 150°C 	wrong catalyst doesn't get this mark ignore high / warm temperature	
Total marks			3

Q3.

Question	Answer	Extra information	Marks
	$ \begin{array}{c} \text{H} \quad \quad \quad \text{H} \\ \quad \quad \quad \\ \text{C} = \text{C} - \text{C} - \text{H} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array} $	bonds must be displayed correctly ignore bond angles	1
Total marks			1

Q4.

Question	Answer	Marks
A	LPG	1
B	Diesel	4
C	Ethanol	3
D	Hydrogen	2
Total marks		4

Q5.

Question	Answer	Marks
A	Methane	1
B	Ethane	3
C	Butane	2
D	Nonane	4
Total marks		4

Q6.

Question	Answer	Extra information	Marks
(a)	4		1
(b)	2		1
(c)	2		1
(d)	2		1
Total marks			4

Q7.

Question	Answer			Marks
	A	CO	1	1
	B	CS ₂	4	1
	C	C ₂ H ₄	2	1
	D	C ₃ H ₈	3	1
Total marks				4

Q8.

Question	Answer	Extra information	Marks
(a)	4		1
(b)	3		1
(c)	3		1
(d)	1		1
Total marks			4

Q9.

Question	Answer			Marks
	A	0	2	1
	B	6	3	1
	C	12	4	1
	D	-90	1	1
Total marks				4

Q10.

Question	Answer	Extra information	Marks
(a)	2		1
(b)	1		1
(c)	4		1
(d)	2		1
Total marks			4

Q11.

Question	Answer	Extra information	Marks
(a)	1		1
(b)	3		1
(c)	2		1
Total marks			3