

Mark Scheme - AS 2.4 Organic Compounds

1 4-methylpent-2-ene

[1]

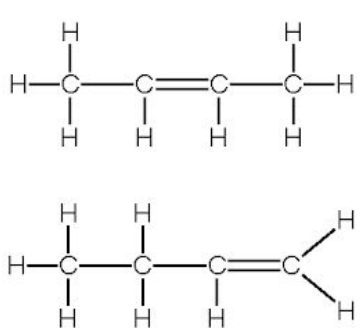
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Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	3	$ \begin{array}{c} \text{H} & \text{H} & \text{H} \\ & & \\ \text{H}-\text{C} & -\text{C} & -\text{C}-\text{H} \\ & & \\ \text{H} & \text{H} & \text{H} \end{array} $ <p>(1)</p> <p>C₆H₁₄ (1)</p> <p>methane (1)</p>			
(b)	(i)	1	ethene	C ₂ H ₄	polyethene
	(ii)	1	monomers		unsaturated
(c)	(i)	1	polytetrafluoroethene	PTFE	
	(ii)	1	$ \begin{array}{c} \text{F} & \text{F} \\ & \\ -\text{C} & -\text{C}- \\ & \\ \text{F} & \text{F} \end{array} $		ignore brackets

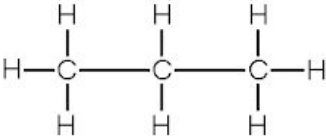
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Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	4	<p><i>Name</i> propene (1)</p> <p><i>Molecular formula</i> CH₄ (1)</p> <p><i>Structural formula</i></p> $ \begin{array}{cccc} & \text{H} & \text{H} & \text{H} & \text{H} \\ & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{C} - \text{H} \\ & & & & \\ & \text{H} & \text{H} & \text{H} & \text{H} \end{array} \quad (1) $ <p><i>Family of hydrocarbons – both</i> needed (1)</p> <p>alkane</p> <p>alkene</p>			
(b)	2	<p>double bond breaks / changes to single bond (1)</p> <p>many ethene molecules join together / form long chain or polymer (1)</p>			
(c)	1	$ \begin{array}{cc} \text{F} & \text{F} \\ & \\ \text{C} & = \text{C} \\ & \\ \text{F} & \text{F} \end{array} $ <p>ignore 'n' and any brackets used</p>			

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Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	1	either of following 	correct structure for 2-methylpropene		
(b)	4	double bonds open (1R) Reserved mark <ul style="list-style-type: none"> propene molecules join together / form chains (1) (addition) polymerisation (1) repeat unit $\left[\text{C}_3\text{H}_6 \right]_n$ (1) any 2 of high temp / high pressure / catalyst (1) any 3 up to 3 max			condensation polymerisation

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Sub-section	Mark	Answer	Accept	Neutral answer	Do not accept
(a)	1	C_4H_{10}			
(b)	2	propane (1)  (1)			
(c)	1	C_3H_6			

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Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
(a)		1	$C_nH_{2n+1}OH$	$C_nH_{2n+2}O$		
(b)		2	$ \begin{array}{ccccccc} & H & H & H & & & \\ & & & & & & \\ H & -C & -C & -C & -O & -H & \\ & & & & & & \\ & H & H & H & & & \end{array} $ <p style="text-align: right;">(1)</p> $ \begin{array}{ccccccc} & H & H & H & & & \\ & & & & & & \\ H & -C & -C & -C & -H & & \\ & & & & & & \\ & H & OH & H & & & \end{array} $ <p style="text-align: right;">(1)</p>	$CH_3CH_2CH_2OH$ $CH_3CH_2CH_3$ $\quad $ $\quad OH$		
(c)		2	propene	(1)		
			$ \begin{array}{ccccccc} & H & H & H & & & \\ & & & & & & \\ H & -C & =C & -C & -H & & \\ & & & & & & \\ & & & H & & & \end{array} $ <p style="text-align: right;">(1)</p>			

Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
7	(a)	1	C_3H_6		CH_2CHCH_3	
	(b)	1	$ \begin{array}{ccccc} & H & H & H & \\ & & & & \\ H & -C & -C & -C & -H \\ & & & & \\ & H & H & H & \end{array} $			
	(c)	3	<ul style="list-style-type: none"> • double bond opens (1) R • ethene molecules join together • long chain / single chain formed / polymer formed • addition reaction/ addition polymerisation <p>any two for (1) each</p>		<p>becomes single bond loses double bond</p> <p>'additional'</p>	

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Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
(a)	(i)	2	A and C - both needed (1) B and D - both needed (1)	correct formulae/names for both correct formulae/names for both		
	(ii)	1	E	propene		
(b)		1	C ₁₀ H ₂₂	H ₂₂ C ₁₀		

Sub-section		Mark	Answer	Accept	Neutral answer	Do not accept
(a)		2	alcohols (1) alkenes (1)			
(b)		2	add bromine water (1) stays brown/orange/no reaction with C and E turns from brown/orange to colourless (1)	add bromine		red
(c)	(i)	1	same molecular formula but different structure	same type and number of atoms but arranged differently	same atoms	same compound
	(ii)	1	$ \begin{array}{ccccc} & \text{H} & \text{H} & \text{H} & \\ & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{H} \\ & & & & \\ & \text{H} & & \text{H} & \\ & & & & \\ & & & \text{H} - \text{C} - \text{H} & \\ & & & & \\ & & & \text{H} & \end{array} $			
(d)		2	D (1) $ \begin{array}{ccccc} & \text{H} & \text{OH} & \text{H} & \\ & & & & \\ \text{H} & - \text{C} & - \text{C} & - \text{C} & - \text{H} \\ & & & & \\ & \text{H} & \text{H} & \text{H} & \\ & & & & (1) \end{array} $	ether isomer of B or D		

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(a)	(i)	2	$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{H} \\ \\ \text{H} \end{array} \quad (1)$ C_2H_6 (1)			
	(ii)	1	C_8H_{18}			
(b)	(i)	1	ethanol		alcohol	
	(ii)	1	C			
	(iii)	1	wine / beer / alcoholic drinks fuels / biofuels solvents antibacterial gels perfumes / aftershaves any one for (1)		alcohol / drinking / drinks / medicine / cleaning	