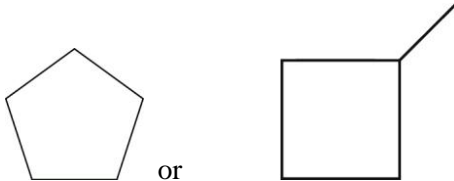


Answers to examination-style questions

Answers	Marks	Examiner's tips
1 a) $\text{CH}_3\text{CH}=\text{CHCH}_3$ addition polymerisation	2	If the monomer has a double $\text{C}=\text{C}$ then it is addition polymerisation.
b) $\text{CH}_3\text{CH}(\text{OH})\text{CH}(\text{OH})\text{CH}_3$ or with no brackets	1	
butane- <u>2,3</u> -diol	1	You will lose out on marks if you do not put the numbers in!
$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{HOOC}-\text{C}-\text{C}-\text{COOH} \\ \quad \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$	1	You could have this structure instead called 2,3-dimethylbutanedioyl chloride.
2,3-dimethylbutanedioic acid condensation polymerisation	1	
	1	
c) NaOH or HCl or Na_2CO_3	1	Remember if the 2 monomers are different and are both bifunctional then this will be condensation polymerisation.
2 polyamide or nylon (2,4) condensation	2	Remember you cannot have water on its own.
		You will be awarded the mark here for nylon with no numbers. An answer with correct numbers would still get the mark, but if the numbers were wrong, no marks would be awarded.
3 a) i)	1	Trailing bonds at the ends are essential to show it continues to bond in a chain.
$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ -\text{C}-\text{C}- \\ \quad \\ \text{H} \quad \text{CN} \end{array}$		
ii) addition	1	
b) i) $\text{C}_3\text{H}_4\text{O}_2$	1	The best way to figure this out is to count all the C, H and O and then find the smallest ratio of them.
ii)	2	1 mark is awarded for the structure and one for the name.
$\begin{array}{c} \text{HO}-\text{C}-\text{CH}_2\text{CH}_2-\text{C}-\text{OH} \\ \quad \quad \quad \\ \text{O} \quad \quad \quad \text{O} \end{array}$		
1,4-butanedioic acid		If you use the IUPAC name do not forget the numbers.

Answers to examination-style questions

Answers	Marks	Examiner's tips
<p>iii) Can be hydrolysed; Can react with nucleophiles.</p>	1	Either of these answers would be awarded the mark.
<p>4 a) additional</p> $\begin{array}{c} \text{CH}_3 \text{ H} \\ \quad \\ -\text{C} - \text{C}- \\ \quad \\ \text{CH}_3 \text{ CH}_3 \end{array}$	2	You must show trailing ends on the repeating unit.
b) $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_3$	1	
c)	1	Either of these would gain the mark.
		
5 a) i) 2-methylbut-1-ene	1	
<p>ii)</p> $\begin{array}{c} \text{CH}_3\text{CH}_2 \\ \\ (-)\text{C} - \text{CH}_2(-) \\ \\ \text{CH}_3 \end{array}$ <p>addition</p>	1	1 mark is given for the drawing of the correct repeating unit and 1 mark is given for naming the type of polymerisation.
<p>b)</p> $\begin{array}{ccccccc} \text{O} & & \text{O} & \text{H} & & \text{H} & \\ & & & & & & \\ (-)\text{C} - \text{CH}_2 - \text{CH}_2 - & \text{C} - \text{N} - & (\text{CH}_2)_6 - & \text{N}(-) & & & \\ & \text{CONH} & & & & & \end{array}$	2	
condensation		
(poly)peptide or (poly)amide	2	Poly is not needed in the answer to gain the mark Make sure the amide is spelt correctly.
6 a) i) hexane-1,6-diamine	1	

Answers to examination-style questions

Answers	Marks	Examiner's tips
<p>ii)</p> $\begin{array}{ccccccc} (-)C & - & (CH_2)_4 & - & C & - & N & - & (CH_2)_6 & - & N & (-) \\ & & & & & & & & & & & \\ O & & & & O & & H & & & & H & \end{array}$	1	You could put CONH in this structure but it is better to show all the bonds.
<p>b) i)</p> $\begin{array}{c} CH_3 \\ \\ H_2N - C - COOH \\ \\ H \end{array}$	1	Remember to count the longest C chain even if it 'goes around corners' and put the NH ₂ on it.
<p>ii)</p> $\begin{array}{ccccccc} & CH_3 & & & CH_3 & & \\ & & & & & & \\ H_2N - & C & - & C & - & N & - & C & - & COOH \\ & & & & & & & & & \\ & H & & O & & H & & H & & \end{array}$	1	The peptide link is essential for the mark.
<p>7 a)</p> <p>Polyalkenes are inert since they have a structure like a saturated alkane and are therefore difficult to react (unless there is UV light to break the bonds in the molecules)</p>	2	These can have several sensible answers. You must think about the environmental aspects and 'How Science Works'.
<p>b)</p> <p>Polyesters and polyamides can have the peptide link hydrolysed in acidic conditions or by enzyme action etc.</p>	2	
<p>c)</p> <p>Not using up natural resources to make the raw materials and stops build up of landfill sites with polymers in them.</p>	2	