

Synthetic Polymers

Question Paper

Level	GCSE
Subject	Chemistry
Exam Board	Edexcel IGCSE
Module	Double Award (Paper 1C)
Topic	Chemistry in Industry
Sub-Topic	Synthetic Polymers
Booklet	Question Paper

Time Allowed: 23 minutes

Score: /19

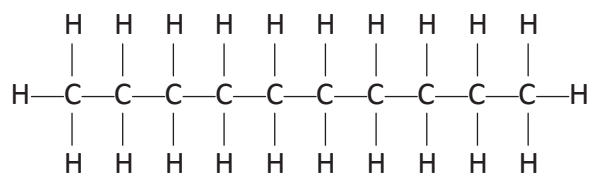
Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	70%	60%	55%	50%	<50%

1 Decane is a hydrocarbon found in crude oil.

The diagram shows the structure of a decane molecule.



(a) (i) Explain why decane is described as a hydrocarbon.

(2)

.....
.....

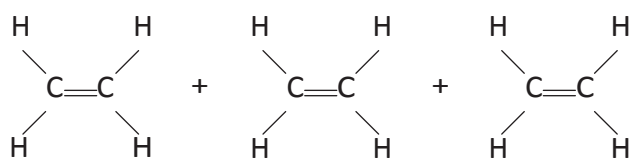
(ii) Give the molecular formula for decane.

(1)

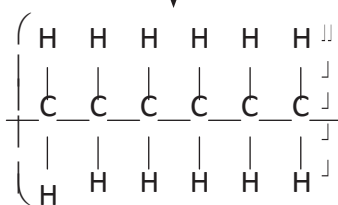
.....

(b) Decane and ethene, C_2H_4 , are produced during the cracking of eicosane, $\text{C}_{20}\text{H}_{42}$.

Ethene is used to make poly(ethene).



ethene



poly(ethene)

(i) What is the name given to this type of polymerisation?

(1)

.....

(ii) Use the diagram to state **two** changes that occur during the formation of poly(ethene).

(2)

.....

.....

.....

.....

.....

(c) Explain why cracking is an important process in the oil industry.

(4)

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(Total for Question 1 = 10 marks)

2 (a) The table shows information about two common addition polymers.

Complete the table for these two polymers.

(4)

Name of polymer	Structure of monomer	Structure of polymer	One use for the polymer
poly(ethene)	$ \begin{array}{c} \text{H} \quad \quad \text{H} \\ \diagdown \quad / \\ \text{C} = \text{C} \\ / \quad \quad \diagdown \\ \text{H} \quad \quad \text{H} \end{array} $		
		$ \left[\begin{array}{cc} \text{CH}_3 & \text{H} \\ & \\ \text{---C} & \text{---C---} \\ & \\ \text{H} & \text{H} \end{array} \right]_n $	water pipes

(b) State two changes that occur in the formation of an addition polymer from its monomer.

(2)

1

.....

2

.....

(c) Addition polymers such as poly(ethene) are very difficult to dispose of because they do not biodegrade easily.

(i) State a reason why addition polymers do not biodegrade easily.

(1)

.....
.....

(ii) Burning and landfill (burying in the ground) are two methods used to dispose of addition polymers.

Suggest a problem with each method of disposal.

(2)

burning.....

.....

landfill.....

.....

(Total for Question 2 = 9 marks)