MARK IT

Science Mastery

1. Read the question and the student's answer carefully.

2. Use the mark scheme to award the student a number of marks and annotate their answer with suggestions to improve.

Stretch: Rewrite the answer to show how it should be done!

Question:

The table below gives some information about some of the fractions in crude oil.

Fraction	Length of hydrocarbons (number of carbon atoms)	% in crude oil	% demand
Gas	1-4	3	14
Petrol	5-8	7	26
Kerosene	9-15	12	18
Diesel	16-24	24	20
Bitumen	>25	54	22

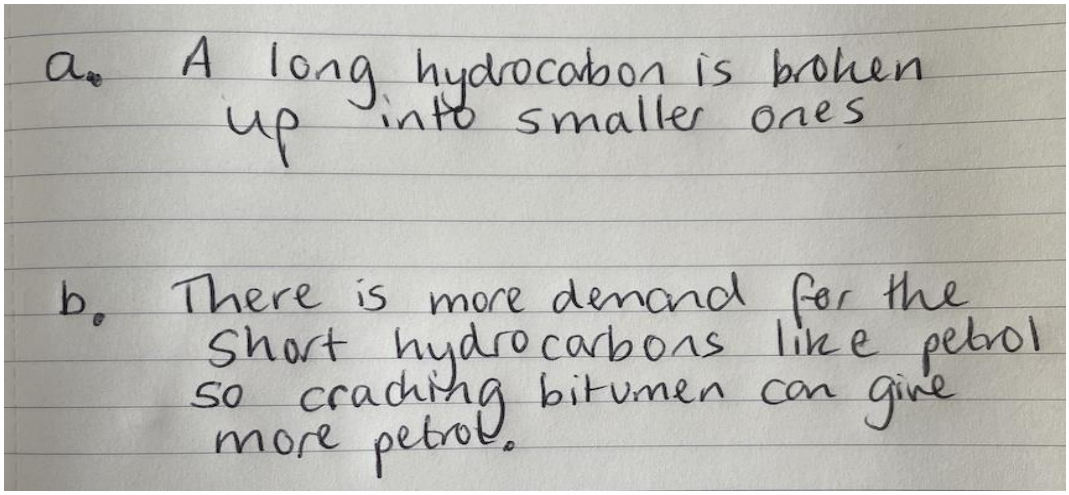
a. The quantity of each fraction can be changed by cracking. Describe what happens when a hydrocarbon is cracked and the conditions required.

(4)

b. Use information from the table to explain why cracking is useful.

(3)

Student answer:



Marks awarded= _____

Mark scheme:

a.

Point	**Mark**
Long/large hydrocarbon chains are broken down	1
Into shorter chain hydrocarbons (alkanes)	1
And alkenes	1
A high temperature or catalyst is required	1

b.

Point	**Mark**
There is higher demand than supply of short chains (from crude oil)	1
So cracking can increase the supply of short chain hydrocarbons	1
Named example, e.g. only 7% of crude oil is petrol but it is over a quarter of the demand, so producing more petrol through cracking can meet this demand	1