AQA, OCR, Edexcel

GCSE Science

GCSE Chemistry

Crude Oil and Cracking Answers



Total Marks: /37

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Crude oil, hydrocarbons and alkanes

Q1: Give a description of how crude oil is formed and where it is found?

A= Found in rocks (1 mark). It is the remains of plants/animals/fossils produced over millions of years (1 mark).

(2 marks)

Q2: What is crude oil mostly made up of?

A= It is a mixture of (1 mark) different length hydrocarbons (1 mark)

(2 marks)

Q3: What is the name given to the hydrocarbons that are found in crude oil?

A= Alkanes

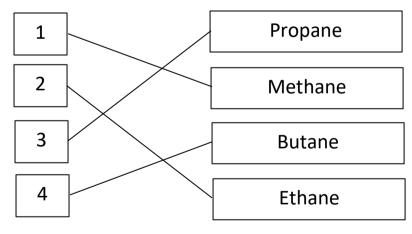
(1 mark)

Q4: Complete the general formula for the compounds found in crude oil.



(2 marks)

Q5: Match up the alkane with the number in the homologous series.

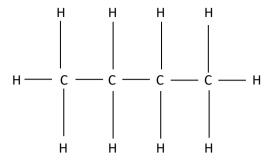


(4 marks)

Q6: Draw the alkane with the formula C_4H_{10} .

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(2 marks)

Q7: What is the purpose of fractional distillation?

A= To separate the different length hydrocarbons (1 mark)

Q8: Within each fraction, will the molecules have different or similar numbers of carbon atoms?

A= Similar

(1 mark)

Q9: The fractions can be processed to produce fuels and feedstock for the petrochemical industry. Give three examples of fuels which are produced from crude oil that are used in our society.

A= petrol, diesel oil, kerosene, heavy fuel oil, liquefied petroleum gases/ lighter fuel, bitumen

(3 marks)

Q10: How does fractional distillation use heat to perform its purpose?

A= heat vaporises the crude oil (1 mark) short hydrocarbons have lower boiling point/longer ones have a higher boiling point (1 mark) small hydrocarbons condense at lower temperatures/longer ones at higher temperatures (1 mark)

(3 marks)

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Properties of hydrocarbons

Q11: Give two examples of properties of hydrocarbons that are dependent upon the size of the hydrocarbon molecule.

A= boiling point, viscosity and flammability

(2 marks)

Q12: Complete the sentences using the words in the boxes.

The combustion of hydrocarbon fuels releases energy (1 mark). During combustion, the carbon (1 mark) and hydrogen (1 mark) in the fuels are oxidised.

The complete combustion of a hydrocarbon produces carbon dioxide (1 mark) and water (1 mark).

(5 marks)

Q13: Balance the equation for the complete combustion of this hydrocarbon.

$$2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$$

(4 marks)

Cracking and alkenes

Q14: What is cracking?

A= Hydrocarbons are broken down (1 mark) to produce smaller more useful molecules (1 mark).

(2 marks)

Q15: Give an example of a method by which cracking can be carried out.

A= catalytic cracking/ steam cracking

(1 mark)

Q16: Alkenes along with alkanes can be produced from cracking. How do we test for alkenes and what do we see?

A= tested with bromine water (1 mark) it will turn bromine water colourless (1 mark).

(2 marks)

Q17: What are alkenes used for?

A= they are used to produce polymers/ are the starting material for other chemicals .

(1 mark)

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