CHEMISTRY ONLINE
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CHEMISTRY

ORGANIC CHEMISTRY

Level & Board	AQA (A-LEVEL)
TOPIC:	ALKANES
PAPER TYPE:	SOLUTION - 2
TOTAL QUESTIONS	10
TOTAL MARKS	28

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Alkanes - 2

1.

(a)

Equation to show the complete combustion of $C_{15}H_{32}$ is as:

$C_{15}H_{32} + 23O_2 \rightarrow 15CO_2 + 16H_2O$

(2)

(b)

Identity of product: CO or carbon monoxide

Equation: $CH_4 + 4/3\ O_2 \rightarrow CO + 2H_2O$

(3)

2. **B**

(1)

3.

Name of the process involved: Cracking

Two equations for reactions in which ethene is formed from decane by this process are as:

$C_{10}H_{22} \rightarrow C_2H_4 + C_8H_{18}$

$C_{10}H_{22} \rightarrow 2C_2H_4 + C_6H_1$

Economic importance:

$C_{10}H_{22}$ or larger alkanes: low demand and less useful so by cracking these products are more useful.

As

The C_2H_4 or smaller alkanes are in high demand and more useful.
Ethene is used to make compounds like polymers/plastics/ethanol.
These products are as octane or smaller alkanes used as a petrol or fuels.

(6)

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4. D

(1)

5.

(a)

The catalyst is coated on a honeycomb because it gives large surface area for the faster reaction to occur.

(2)

(b)

Equation for the reaction of octane with nitrogen monoxide to form nitrogen, carbon dioxide and water can be represented as:

$C_8H_{18} + 25NO \rightarrow 8CO_2 + 9H_2O + 12\frac{1}{2}N_2$

(2)

6. D (1)

7.

Equation for the incomplete combustion of C_8H_{18} is as:

$C_8H_{18} + 8\frac{1}{2}\ O_2 \rightarrow 8CO + 9H_2O$

Catalyst used in the catalytic converter:

Rh or Pt or Pd

Equation showing how carbon monoxide is removed in a catalytic converter is as:

$2CO + 2NO \rightarrow 2CO_2 + N_2$

Greenhouse gas can absorbs infrared radiations that is why the water produced in the exhaust gases may contribute to global warming.

(4)

8. C

(1)

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9.

(a)

Equation:

$C_8H_{18} + 12.5O_2 \rightarrow 8CO_2 + 9H_2O$

(1)

(b)

Equation:

$2SNO + C_8H_{18} \rightarrow 12.5N_2 + 9H_2O + 8CO_2$

(1)

(c)

Moles $SO_2 = \frac{6490000 \times 10^6}{64.1} = 1.012 \times 10^{11}$

Mass of $CaO = \frac{1.012 \times 10^{11} \times 56.1}{1000} = 5.68 \times 10^9 kg$

(2)

10. C

(1)

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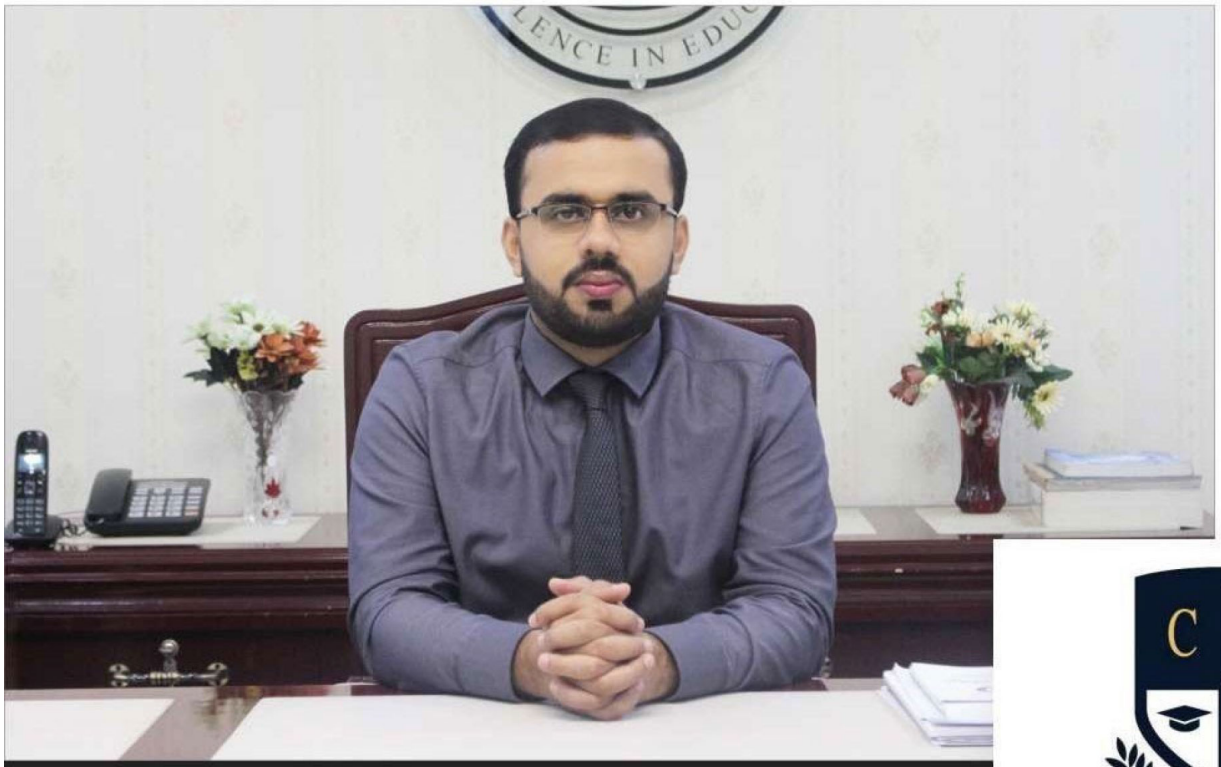

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- Founder & CEO of Chemistry Online Tuition Ltd.
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