Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Alkanes

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Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Mark Schemes

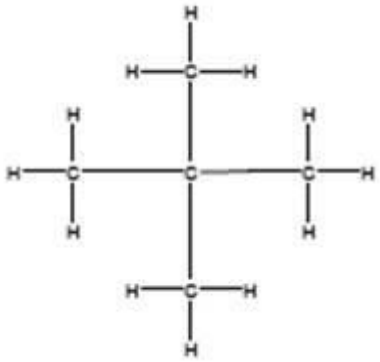
Q1.

(a) $C_n H_{2n+2}$

Allow x in place of n

1

(b)



Chain

Must show every bond
Allow branched chain

2

(c) C_9H_{20}

Only

1

To break the (C-C and/or C-H) bonds

M2=0 if break C=C

1

To make products which are in greater demand / higher value / make alkenes

Not more useful products
Allow specific answers relating to question

1

(d) $C_5H_{12} + 3O_2 \rightarrow 5C + 6H_2O$

Allow other balanced equations which give C and CO/CO_2

1

Causes global dimming / exacerbates asthma / causes breathing problems / makes visibility poor / smog

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Apply list principle
Ignore causes cancer / toxic

1

(e) $\frac{106.5}{143}$ (x 100)

1

74.48%

Allow 74.5%

1

3

Only

1

(f) 2,3-dichloro-3-methylpentane

Ignore punctuation

1

C_3H_6Cl

Only

1

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Q2.

(a) $C_{16}H_{34} + 24.5O_2 \rightarrow 16CO_2 + 17H_2O$

Allow multiples

Ignore state symbols in equation

1

(b) Solidifies/freezes/goes viscous/waxing occurs

Allow does not vapourise/less volatile

Lack of Oxygen = 0

Apply list principle

1

(c) (i) $N_2 + O_2 \rightarrow 2NO$

Allow multiples/Ignore state symbols in equation

1

Spark/(very) high temp/2500 °C – 4000 °C

Ignore pressure/catalyst/low % of oxygen

Not just heat/hot

Apply list principle eg if high temp 150 °C = 0

1

(ii) $2CO + 2NO \rightarrow 2CO_2 + N_2$

Allow multiples/Ignore state symbols in equation

OR

$C_8H_{18} + 25NO \rightarrow 8CO_2 + 12.5\ N_2 + 9H_2O$

Allow other alkane reacting with NO in correctly balanced equation

OR

$C + 2NO \rightarrow CO_2 + N_2$

OR

$2NO \rightarrow N_2 + O_2$

1

Pt/Pd/Rh/Ir

Penalise contradiction of name and symbol

1

(iii) $4NO_2 + 2H_2O + O_2 \rightarrow 4HNO_3$

Allow multiples/Ignore state symbols in equation

1

(d) (i) High temp/

anywhere in range 400 °C – 900 °C/

anywhere in range 670-1200K/high pressure/anywhere in range 5000 kPa up to 8000 kPa/

Not catalyst/heat

1

(ii) $C_{16}H_{34} \rightarrow C_6H_{14} + 2C_4H_8 + C_2H_4$

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Or $C_{16}H_{34} \rightarrow C_6H_{14} + C_4H_8 + 3C_2H_4$

Do not allow multiples

Ignore state symbols in equation

1

(iii) Polymers/plastics/named polymer

Allow polyesters or polyamides

Ignore object made from polymer

1

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