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

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Name of the Student:_____
Max. Marks : 19 Marks **Time : 19 Minutes**

Mark Schemes

Q1.

(a) 1.75×10^{-3} AND -6.46

Allow 0.00175

NOT other sig figs (e.g. 1.7 x 10^{-3}, -6.5)

NOT 1.74 x 10^{-3}

1

(b) **M1** Unit of *k* (is s^{-1})

Mark independently

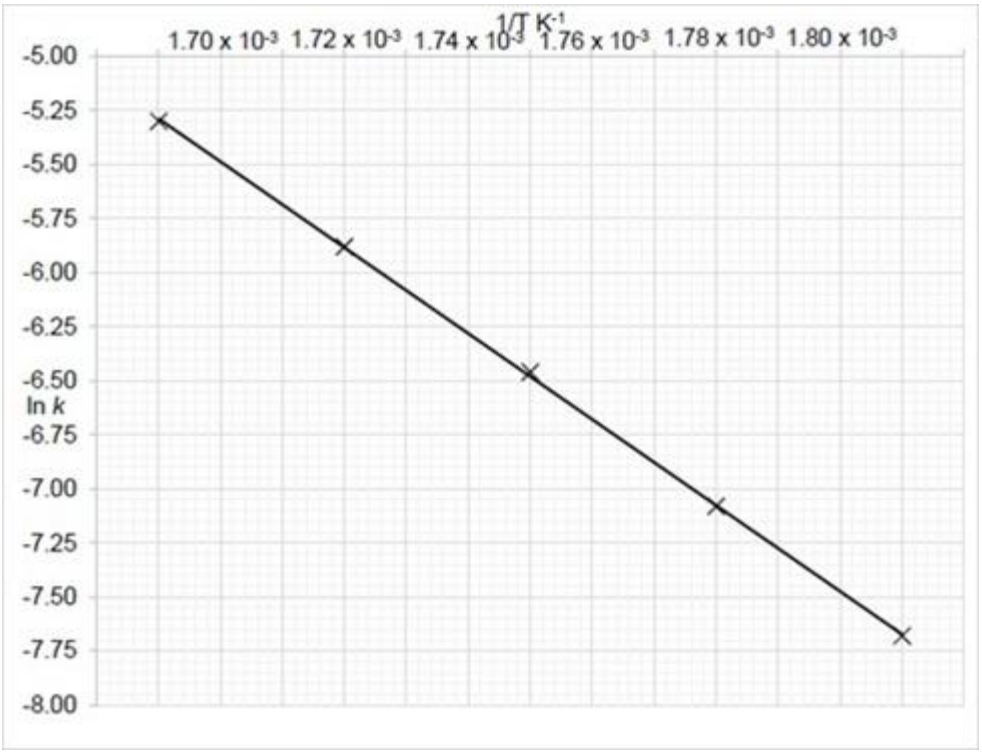
M1 Allow s^{-1} or k / s^{-1} or k in s^{-1}

NOT just k

M2 (Order) 1/first

2

(c)



M1 Points plotted (all within half a square) (ECF from (a) for 3rd point including if no values in the table)

M2 Best fit straight line (line within one square of each point) (best fit line - points above and below - based on their plotted points)

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2

(d) **M1** Gradient (expected value = -19900)

Answer of (+)161 to (+)170 gets 3/3

Allow range from -19400 to -20400 from correct plotting and best fit line

ECF from any straight line

M2 $-\frac{E_a}{R}$ = gradient

can be implied by calculation shown e.g.
E_a = -M1 × 8.31 gets M2

M3 $E_a = \frac{-M1 \times 8.31}{1000}$ = (+)165 (kJ mol^{-1})

Allow negative E_a if positive gradient in M1

3

(e) **M1** (alkene) CH_2=$CHCH_3$

M2 (carbonyl) $(CH_3)_2CO$ / CH_3COCH_3

Allow any correct structural representations

C=C must be shown

Allow $C(CH_3)_2O$

If correct two structures are given but the wrong way round, then scores 1 mark

2

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Q2.

(a) **M1** Tollens' reagent or ammoniacal silver nitrate

M2 silver mirror

M3 no reaction / no (visible) change / colourless

Alternative

M1 *sodium*

M2 *no reaction / no (visible) change*

M3 *fizzing / bubbles / effervescence*

OR

M1 Fehling's solution

M2 orange/brick/red solid/precipitate

M3 no reaction / no (visible) change

Do not allow acidified potassium dichromate(VI)

*If no reagent or incorrect reagent in **M1**, then no marks can score in **M2/3***

*Allow name or formula of suitable reagent for **M1**. Penalise incorrect formula of correct reagent in **M1** (even if correct name also given) but mark on for **M2/3***

*For Tollens': ignore $AgNO_3$ or $[Ag(NH_3)_2]^+$ or silver mirror test or "Tollings' reagent" on their own, but mark on for **M2/3.** Allow silver/black precipitate/solid/deposit for **M2**.*

*For Fehling's (or Benedict's): ignore $Cu^{2+}(aq)$ or $CuSO_4$ or "Fellings" on their own, but mark on for **M2/3***

Ignore "nothing (happens)" / "no observation"

3

(b) **M1** bromine (water) / Br_2 / $Br_2(aq)$

M2 orange/yellow / no reaction / no (visible) change

M3 colourless / decolourised

Alternative

M1 *acidified potassium manganate(VII) / $KMnO_4/H^+$*

M2 *no reaction / no (visible) change / purple*

M3 *colourless / decolourised*

*If no reagent or incorrect reagent in **M1**, then no marks can score in **M2/3***

*Allow name or formula of suitable reagent for **M1**. Penalise incorrect formula of correct reagent in **M1** (even if correct name also given) but mark on for **M2/3**.*

*Allow brown-red or brown for **M2**. (Ignore red)*

*Ignore clear for **M3***

3

(c) **M1** H = 1.0078

M2 C = 12.0096

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M3 M_r= (6 × M1) + (6 × M2) = 78.1044

M2 *Allow ECF from* ***M1***

M3 *Allow ECF from* ***M1*** *and* ***M2***

Penalise not giving answers to 4dp once only (on the first occasion it would score otherwise)

(providing answers are given to at least 2dp)

3

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