Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic:Aldehydes & ketones

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Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks :24 Marks **Time :24 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

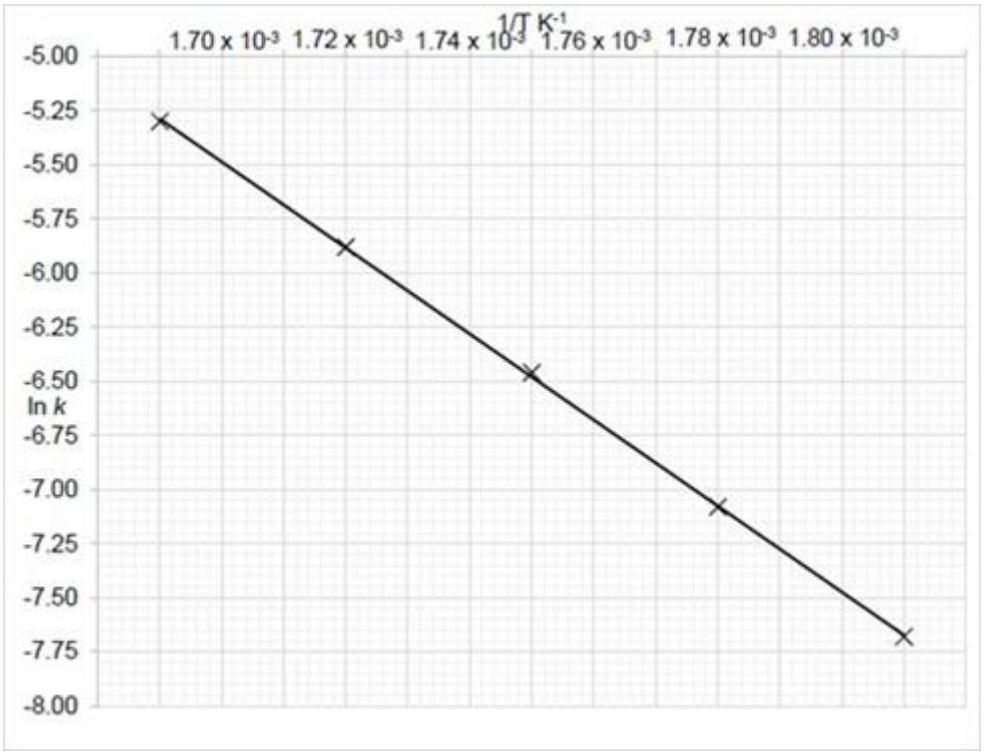
M1 Allow s^{-1} or k / s^{-1} or k in s^{-1}

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

[10]

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Q2.

D

$CH_3CH_2CHO \rightarrow CH_3CH_2CH(OH)CN$

[1]

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Q3.

A

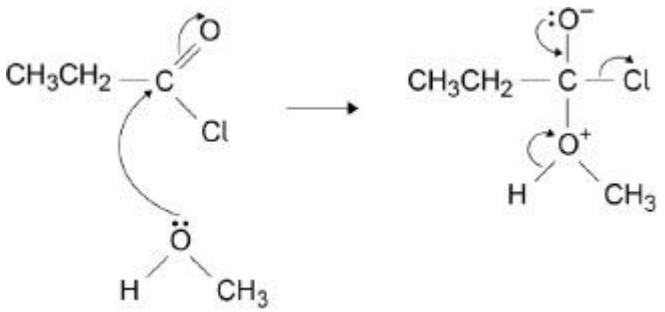
comparing fingerprint regions of their infrared spectra

[1]

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Q4.

(a)



M1 Structures of reactant species

M2 Arrow from lp on O to C

M3 Arrow from C=O bond to O

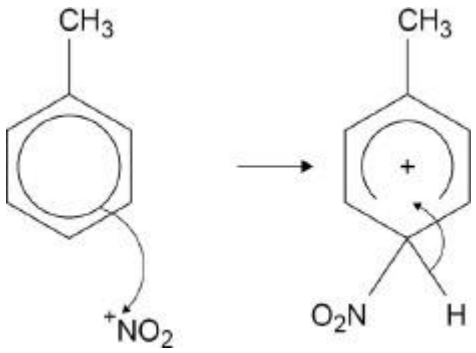
M4 3 curly arrows and lp on intermediate

Allow full marks for candidates who draw a second intermediate formed after formation of C=O and loss of Cl^- then loss of H^+

Ignore any attempt to show the final products

4

(b)



M1 Structures of reactant species including + on N of $^+NO_2$

M2 Arrow from ring (inside hexagon) to N or + on N

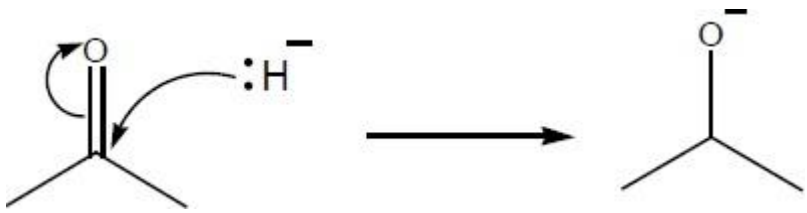
M3 Arrow from C-H bond into hexagon

M4 Electrophilic substitution

Apply list principle

4

(c)



M1 Arrow from lp on hydride to C

M2 Arrow from C=O to O

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M3 Intermediate structure / Allow displayed or abbreviated structures

Ignore any attempt to show further steps if correct Penalise further incorrect steps

M4 Nucleophilic addition

Apply list principle

4

[12]

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