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

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Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

Mark Schemes

Q1.

(a) Dehydration

Allow (acid catalysed) Elimination

M1

Conc H_2SO_4

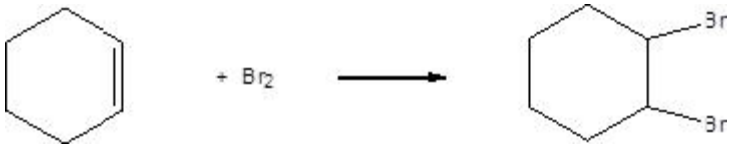
Allow Conc H_3PO_4

M2

(b) Br_2

Allow bromine (water)
Allow Cl_2 or I_2
Allow O_2 if epoxide route used

M1



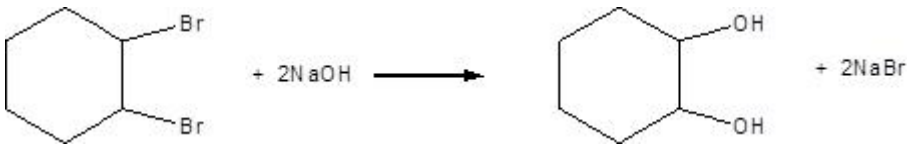
allow conseq equation to H_2, H_2O, HBr, HCl. HI and H_2SO_4
An epoxide is a feasible alternative that could score here and consequentially M3 and M4

M2

NaOH

Or *KOH or other suitable strong alkali*

M3



Allow this equation with molecular formulae

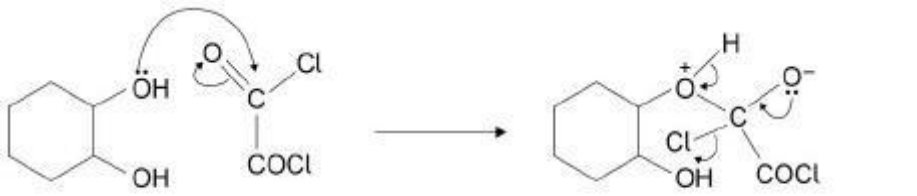
M4

(c) **M1** (nucleophilic)addition-elimination

Note lone pair required for M5

M1

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M2 curly arrow from lp on O to C

M4 for structure of intermediate

M2
M3
M4
M5

(d) Less energy used **OR** Better yield

OR *reduces practical losses, simpler plant,*

M1

Less waste **OR** Less pollution

OR *maximises the use of raw materials in the process into useful products, saves resources*

M2

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Q2.

(a) **M1** flask not clamped

allow *<u>only</u> the condenser is clamped*

1

M2 sealed system / bung in condenser

allow *explanation of effect of bung being there e.g. pressure build up*

not *reference to incorrect water direction*

1

(b) sulfuric acid needs adding

allow *hydrochloric / nitric / phosphoric*

ignore *conc/dil*

not *just acid/H^+*

1

(c) **M1** direction of water flow through condenser

allow *reference to water direction from answer to (a)*

1

M2 thermometer not needed

allow *references to safety issue(s) if* ***not*** *given in (a)*

ignore *reference to position of thermometer*

1

(d) to prevent 'bumping'

allow *prevent large bubbles / ensure small bubbles*

not *increases rate*

1

(e) **M1** (fractional) distillation

1

M2 $\frac{6.5}{60}$ mol propan-1-ol (= max $\frac{6.5}{60}$ mol propanoic acid) (0.108)

M2 $\frac{6.5}{60}$ *mol propan-1-ol (= max* $\frac{6.5}{60}$ *mol propanoic acid)*

1

M3 $\frac{6.5 \times 74}{60}$ = 8.02 g (i.e. M2 x 74)

M3 $\frac{3.25}{74}$ *mol propanoic acid formed*

1

M4 $\frac{3.25 \times 100}{8.02}$ = 40.5 %

M4 $\frac{3.25/74}{6.5/60} \times 100$ *= 40.5 %*

1

(f) **M1** add sodium carbonate/hydrogencarbonate

1

M2 effervescence / bubbles

not *gives off (CO_2) gas*

1

M3 no (visible) change/reaction

not *nothing / no observation*

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allow *acidified sodium/potassium dichromate*

no visible change / stays orange

orange to green

allow *named alcohol + sulfuric acid plus sweet smell and no change/reaction*

allow *named carboxylic acid + sulfuric acid plus no change/reaction and sweet smell*

not *pH measurement*

incorrect reagent = 0/3

incomplete reagent – mark on

1

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