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

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Exam Preparation and Free Resources

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

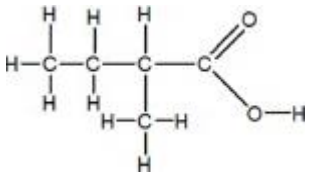
Mark Schemes

Q1.

(a) $C_4H_9COOH + NaHCO_3 \rightarrow C_4H_9COONa + CO_2 + H_2O$

1

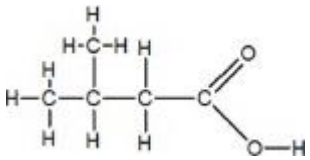
(b)



$CH_3CH_2CH(CH_3)COOH$

1

(c) **M1**



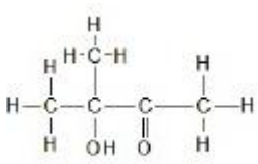
M1 $(CH_3)_2CHCH_2COOH$

M2 6:1:2:1 (Any order)

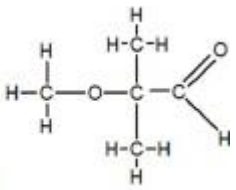
M2 Allow ECF for a 5 carbon carboxylic acid

2

(d) **M1**



Or



M2
Adjacent C has no (non-equivalent) H attached (so no splitting/spin-spin coupling takes place)

M1 $(CH_3)_2C(OH)COCH_3$ or $CH_3OC(CH_3)_2CHO$

2

(e)

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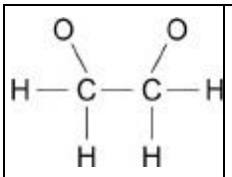
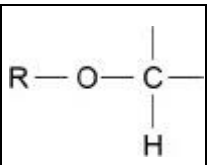
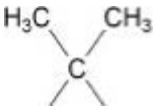
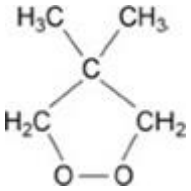
	Scores M1 and M2	Allow M1 for	
	Scores M3 and M4	Allow M3 for	RCH_3
	Scores M5		This structure also scores M5 
^{13}C peaks	= 3	M6	Allow ECF from their M5 of $C_5H_{10}O_2$

6

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Q2.

(a) **M1** Electrophilic Addition

M2 HBr

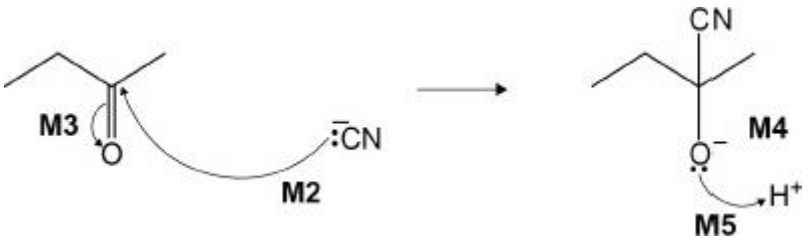
2

(b) **M1** Butan-2-ol or correct structure eg $CH_3CH(OH)CH_2CH_3$

M2 NaOH AND (warm) aqueous (Allow cold if stated)

2

(c) **M1** HCN or KCN/H_2SO_4



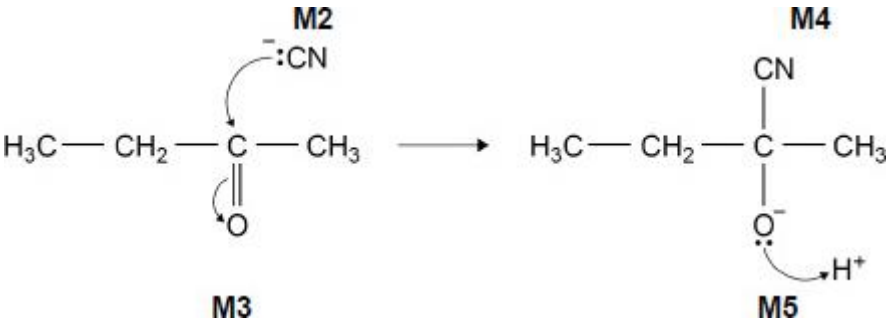
M2 Arrow from lone pair on C to C of C=O

M3 Arrow from C=O to O

M4 Structure of intermediate including negative on O

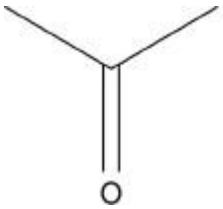
M5 Arrow from lone pair on O to H^+

OR



5

(d)



planar/ flat

Allow planar carbonyl group

M2 Equal chance (50/50) attack from above/below OWTTE

Either side

M3 Giving equal amounts of both optical isomers/enantiomers

3

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