Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: AminoAcids, Proteins & DNA

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Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 29 Marks **Time : 29 Minutes**

Mark Schemes

Q1.

(a) *(i)* $CH_3CH=CHCH_3$

1

*Addition or radical (**QoL**)*

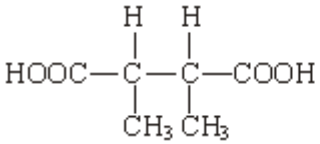
1

(ii) $CH_3CH(OH)CH(OH)CH_3$ *or with no brackets*

1

butan(e)–2,3–diol or 2,3–butan(e)diol

1



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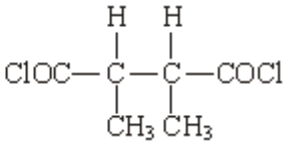

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2,3–dimethylbutan(e)dioic acid *2,3–dimethylbutan(e)dioyl chloride*

ignore –1,4–

1

*condensation (**QoL**)*

1

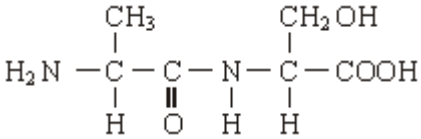
(iii) *NaOH or HCl etc or* Na_2CO_3

Allow conc sulphuric/nitric

***NOT** water nor acidified water nor weak acids*

1

(b) *Structure 1*



Allow –CONH– and –COHN–

Allow zwitterions

NOT polypeptides/repeating units

1

Structure 2 either of

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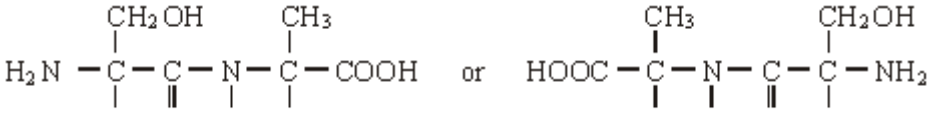

1

(c) (i) $CH_3CH_2CH_2Br$

allow –Cl, –I

1

(ii) CH_3CH_2CN

1

(iii) *(nucleophilic) substitution or from* $CH_3CH_2CH_2Br$

if reduction written here, no further marks

1

further substitution/reaction occurs or other products are formed

Allow reduction forms only one product

1

one of
$(CH_3CH_2CH_2)_2NH$
$(CH_3CH_2CH_2)_3N$
$(CH_3CH_2CH_2)_4N^+ Br^-$

Allow salts including NH_4Br

Allow HBr

1

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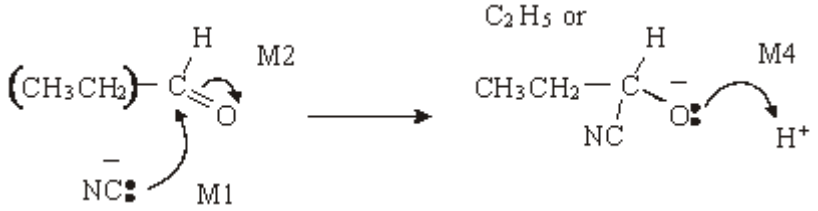
Q2.

(a) necleophilic addition;



1

M3 structure;

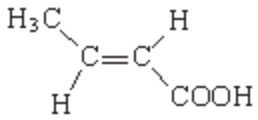
(be lenient on position of charge on CN–)
(M2 not allowed independent of M1,
but allow M1 for correct attack on C+
if M2 show as independent first.)
(+on C of C=O loses M2 but ignore δ+ if correct)
(M4 for arrow and lone pair (only allow for correct M3 or close))

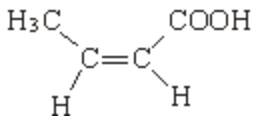
4

(b) (i) 2-hydroxybutanoic acid

1

(ii)



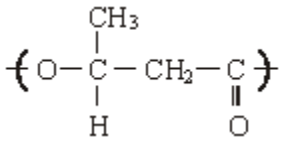


1

geometric(al) or cis-trans

1

(c) (i)



(one unit only) (ignore brackets or n) (trailing bonds are needed)

1

(ii) can be hydrolysed

OR

can be reacted with/attacked by acid/base/nucleophiles/H_2O/OH^-;

1

(d) (i)

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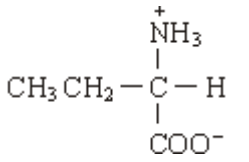
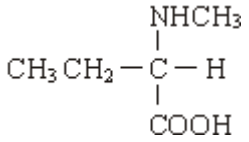


(allow $-NH_3^+$)

1

(ii)



(or zwitterions product)

1

(iii) nucleophilic substitution;

1

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