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

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

Q1.

(a) electron deficient H

Allow H delta plus / slightly positive

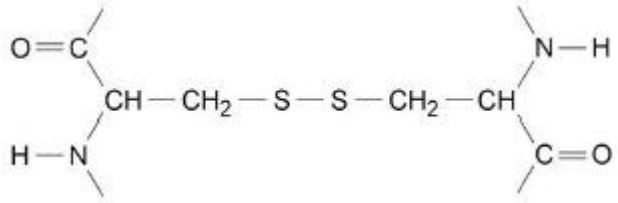
M1

(Which attracts) lone pair/electron pair on O

Penalise lone pair/electron pair donation

M2

(b)



Penalise dashed/dotted S—S
Ignore extra additions to structures

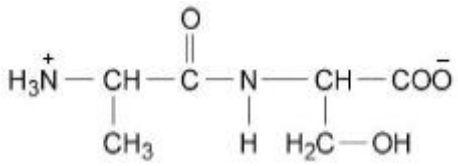
1

(c) Tertiary or Quaternary

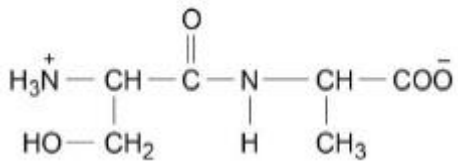
Allow 3° or 4°
do not penalise minor error in spelling e.g. Quarternary

1

(d)



OR



Incorrect peptide bond CE=0
M1 for correct dipeptide
M2 for correct charges
Ignore additional dipeptide in working
Allow –CONH— or –COHN—

1
1

[6]

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Q2.

D

[1]

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Q3.

(a) X – base

1

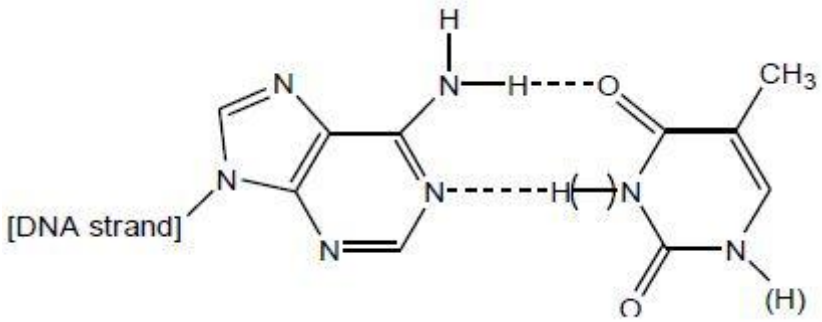
Y – phosphate (group)

1

Ignore organic

Any mention of sugar in either loses that mark

(b) If not Thymine CE=0



Correct structure scores 2, penalise by 1 each error in

- structure of thymine
- orientation of thymine
- hydrogen bonding

Ignore lp on N and O

Don't penalise non-linear H bonds

on RHS of thymine – allow with or without H or – [DNA strand]

2

[4]

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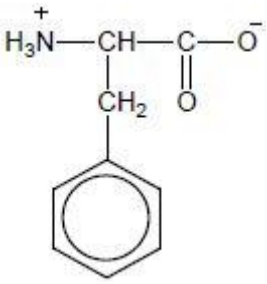
Q4.

(a)

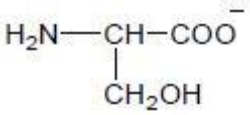


Allow $-CO_2^-$

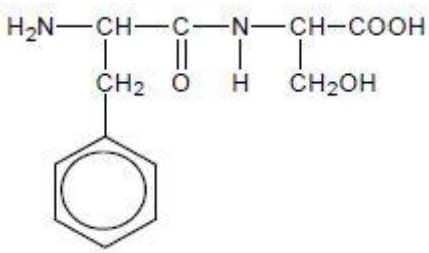
Allow $^+H_3N-$ and NH_3^+-

1

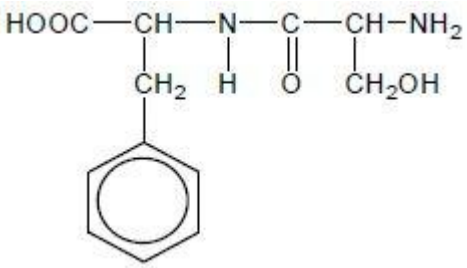
(b)



(c)



1



1

If same wrong amino acid twice – max 1

(d) (nucleophilic) addition-elimination

Not electrophilic addition-elimination.

M1

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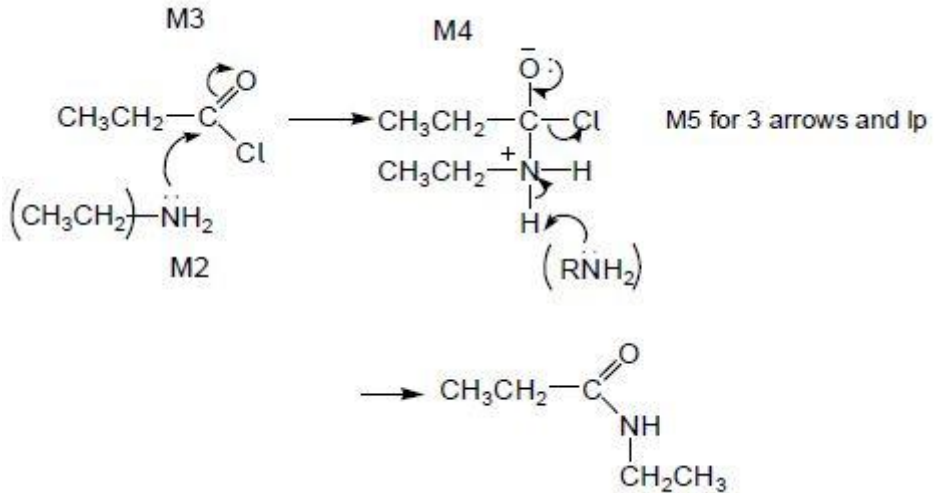

M2 for arrow from lp on N to C

(or to space half way between N and C)

Ignore δ+ and δ− unless wrong

M3 for arrow from C=O bond to O

Not score M3 as an independent first step, but can allow M2 for attack on C+ produced

If Cl lost at this stage, Max 1 for mechanism for M2

M4 for structure of ion including 2 charges

(+ on N must be correct in both cases if drawn twice)

M5 for 3 arrows and lp on O

- may be scored in two steps

Ignore use of RNH_2 to remove H^+ in M5, but penalise use of Cl^-

M2-5

N-ethylpropanamide

M6

[10]

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