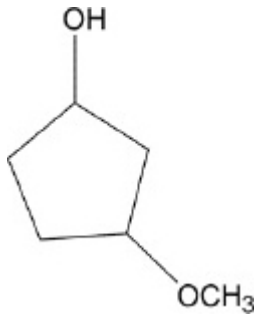
Mark schemes

Q1.

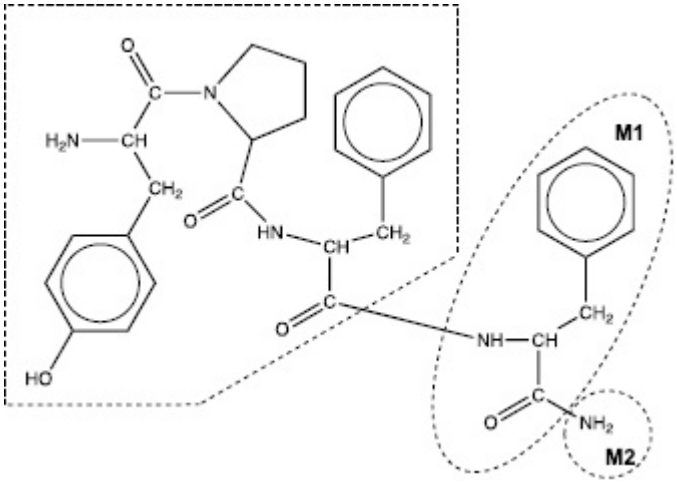
B



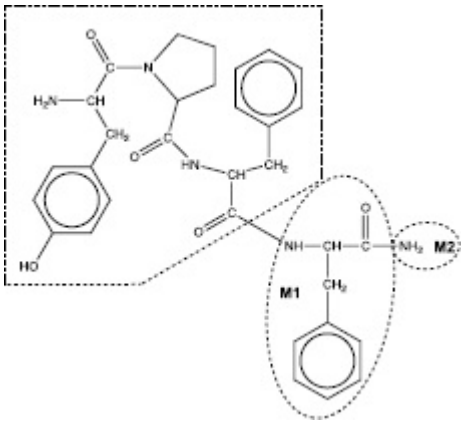
[1]

Q2.

(a)



Alternative form

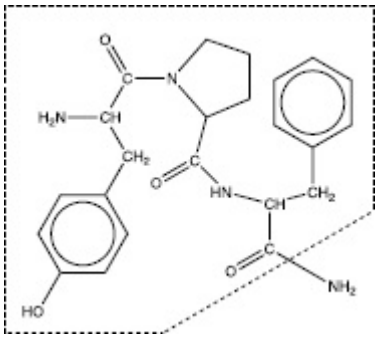


M1 Phe structure drawn with correct peptide link

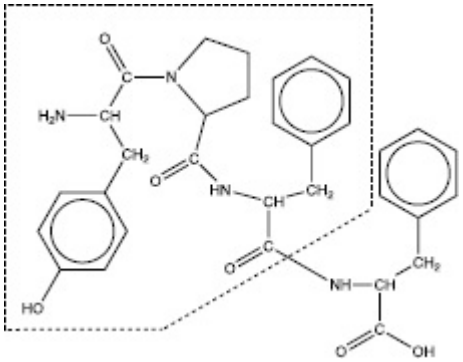
M2 amide group shown on end

M1 *if Phe drawn with COOH or* $CONH_2$

M2 ALLOW *if no Phe drawn i.e. if* NH_2 *only attached directly to C=O on diagram*



*Scores **M2** for ending in amide group*

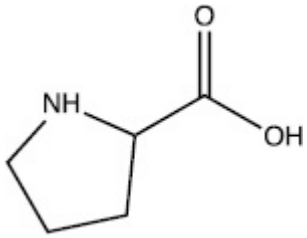


*Scores **M1** for Phe group*

***M1** H needed on N of peptide link drawn unless C-CH-CH_2 drawn skeletal*

2

(b)



***ALLOW** zwitterion*

***ALLOW** -NH_2^+ and/or COO^-*

***ALLOW** with C shown in COOH group*

***ALLOW** without H on N*

***ALLOW** N-H*

***NOT** N-*

1

(c) **M1** (aqueous) HCl/hydrochloric acid

Name or formula of any strong acid or alkali

M2 reflux/heat

***ALLOW** warm / hot / high temperature for heat*

***NOT** T>200°C*

***IGNORE** conc as condition with acid/alkali*

***IGNORE** pressure*

Alternative

***M1** protease/(poly)peptidase/peptase/named protease*

***IGNORE** enzyme*

***M2** warm*

***NOT** hot / high temperature / T>50°C*

2

(d) **M1** lid/cover (on beaker)

Then any 2 from these 3

- prevents escape of vapour (from beaker) / evaporation of solvent (from beaker)
- so atmosphere in beaker is saturated with solvent vapour owtte
- to reduce evaporation from the plate

ALLOW *(for bullet point 3) so solvent can rise up plate*

ALLOW *(for bullet point 3) to avoid plate drying out*

3

(e) Difference in the balance between solubility in solvent/mobile phase and attraction to/retention on stationary phase

ALLOW *difference between (relative) affinity/attraction for solvent and stationary phase*

ALLOW *absorption/adsorption for retention on stationary phase*

1

(f) **M1** ninhydrin

M2 amino acids are colourless / to make the amino acids visible

ALLOW *iodine*

IGNORE *UV*

IGNORE *stated final colour e.g. "turns the amino acids purple" is not enough on its own*

IGNORE *clear*

2

(g) 0.54

ALLOW *0.53 - 0.55 (to min two sig figs)*

1

[12]