

Name of the Student: _____

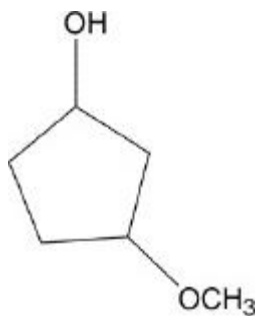
Max. Marks : 17 Marks

Time : 17 Minutes

Mark Schemes

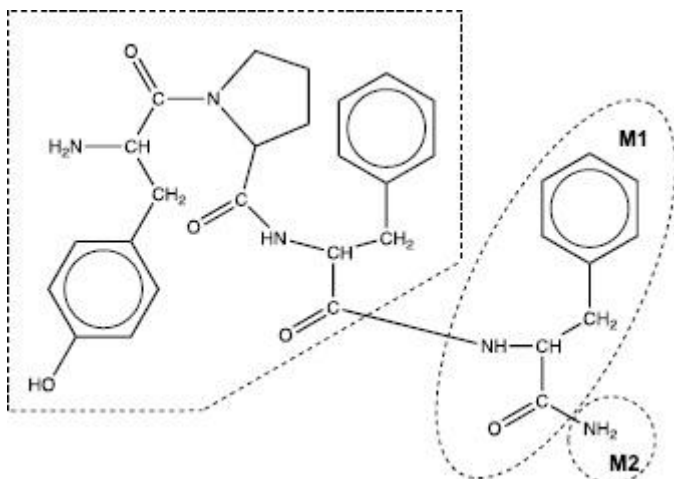
Q1.

B

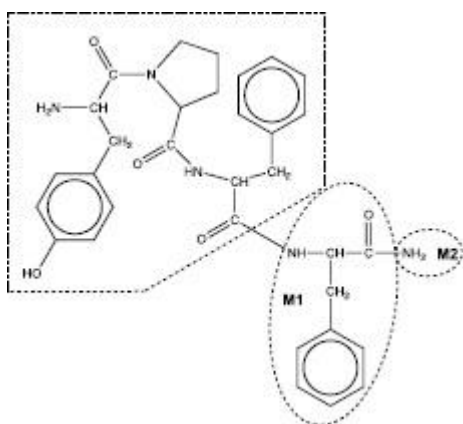


[1]

Q2.
(a)



Alternative form

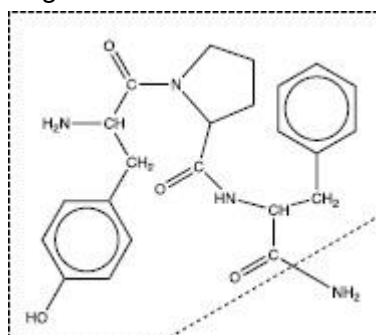


M1 Phe structure drawn with correct peptide link

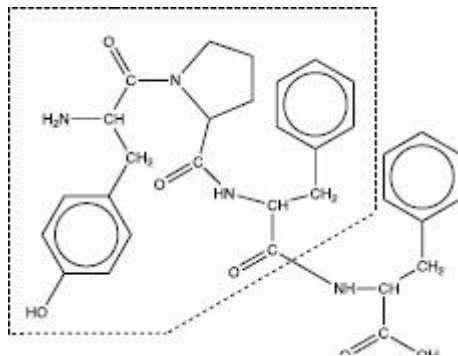
M2 amide group shown on end

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

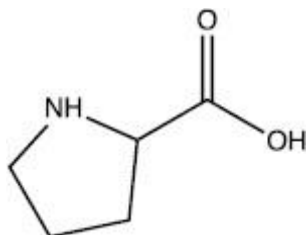


Scores **M1** for Phe group

M1 H needed on N of peptide link drawn unless C-CH-CH₂ drawn skeletal

2

(b)



ALLOW zwitterion

ALLOW -NH₂⁺ 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]

Q3.

(a) **M1** $\frac{27}{80} = 0.34$

1

M2 glycine

M1 some relevant working is needed to arrive at 0.325 - 0.35
no ECF based on **M1**

1

(b) use uv lamp or ninhydrin

allow developing / locating agent / iodine

1

(c) each amino acid has different (relative) affinity/attraction to/solubility in stationary and mobile phases

allow reference to different solubility in solvent OR different affinity for stationary phase

1

[4]