

Name of the Student: _____

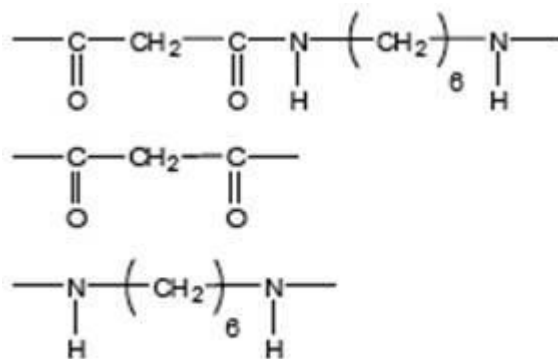
Max. Marks : 27 Marks

Time : 27 Minutes

Mark Schemes

Q1.

(a) (i)



Allow -CONH- or -COHN-

Mark two halves separately

lose 1 each for missing trailing bonds at one or both ends or error in peptide link or either or both of H or OH on ends

1

Not allow -(C₆H₁₂)-

Ignore n

1

(ii) **M1** in polyamides - H bonding

1

M2 in polyalkenes - van der Waals forces

Penalise forces between atoms or van der Waals bonds

1

M3 Stronger forces (of attraction) in polyamides

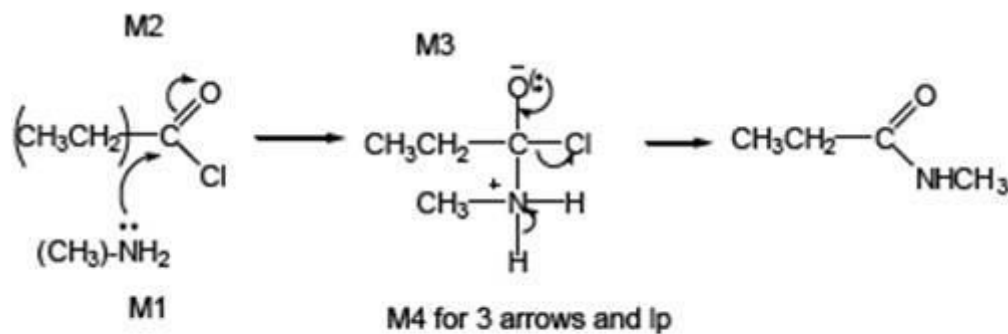
Or H bonding is stronger

(must be a comparison of correct forces to score M3)

Do not award if refer to stronger bonds

1

(b) (i) (nucleophilic) addition elimination



Not allow N-H

Minus sign on NH_2 loses **M1**

1

M2 not allowed independent of **M1**, but allow **M1** for correct attack on C^+

+ rather than δ^+ on $\text{C}=\text{O}$ loses **M2**

If Cl lost with $\text{C}=\text{O}$ breaking, max 1 for **M1**

M3 for correct structure with charges but

lp on O is part of **M4**

only allow **M4** after correct/ very close M3

For M4, ignore NH_3 removing H^+ but lose

M4 for Cl removing H^+ in mechanism,

but ignore HCl as a product

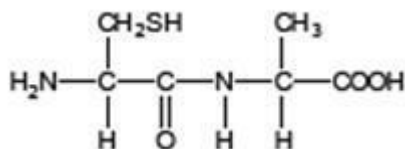
4

(ii) N-methylpropanamide

Not N-methylpropaneamide

1

(c)



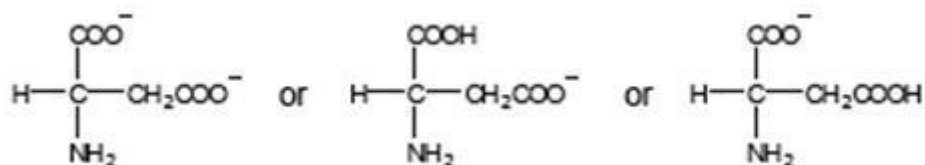
Allow $-\text{CONH}-$ or $-\text{COHN}-$

1

(d) (i) 2-amino-3-hydroxypropanoic acid

1

(ii)



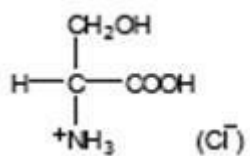
Must be salts of aspartic acid

allow $-\text{CO}_2^-$

allow NH_2-

1

- (iii) Penalise use of aspartic acid once in d(iii) and d(iv)



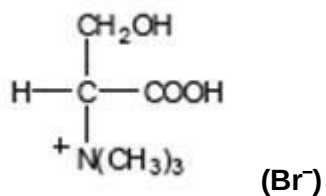
allow $-\text{CO}_2\text{H}$

allow $^+\text{NH}_3-$

don't penalize position of + on NH_3

1

- (iv) Penalise use of aspartic acid once in d(iii) and d(iv)



allow $-\text{CO}_2^-$

must show C-N bond

don't penalize position of + on $\text{N}(\text{CH}_3)_3$

1

[16]

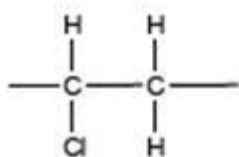
Q2.

(a) Benzene-1,2-dicarboxylic acid

Allow 1,2-benzenedicarboxylic acid

1

(b)



Must show all bonds including trailing bonds

Ignore n

1

(c) (i) 2 C₂H₅OH

NB Two ethanols

1

H₂O

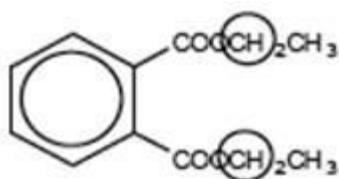
but only one water

1

(ii) 6 or six

1

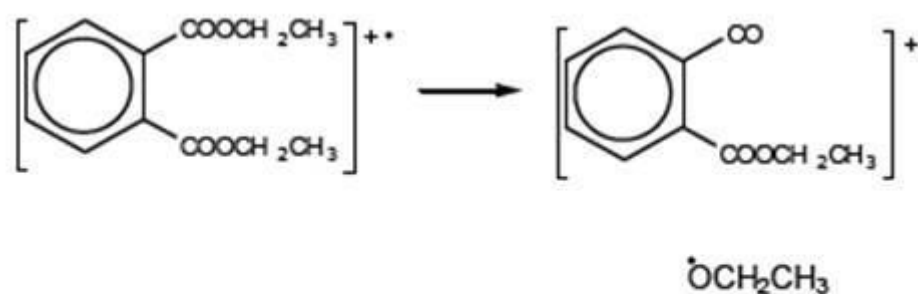
(iii)



Ignore overlap with O to the left or H to the right, but must only include this one carbon.
either or allow both (as they are identical)

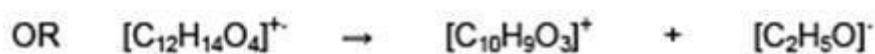
1

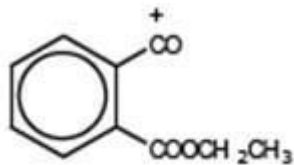
(d)



$\cdot\text{OCH}_2\text{CH}_3$

[DEP]⁺





Allow + on C or O in

1

Dot must be on O in radical

1

- (e) (i) Rate = $k[\text{DEP}]$
Must have brackets but can be ()

1

(ii) Any **two** of

- experiment repeated/continued over a long period
 - repeated by independent body/other scientists/avoiding bias
 - investigate breakdown products
 - results made public
- Not just repetition
Ignore animal testing

2 max

[11]