Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Polymers

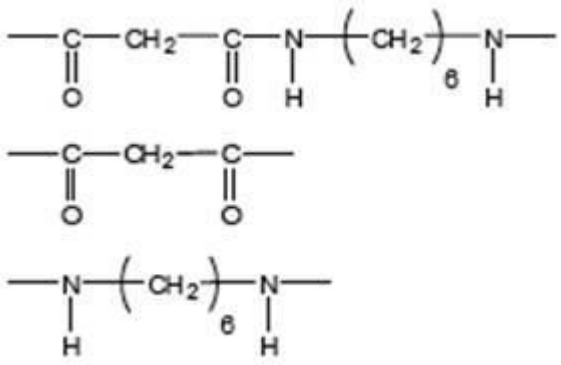
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Exam Preparation and Free Resources

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 –(C_6H_{12})–

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

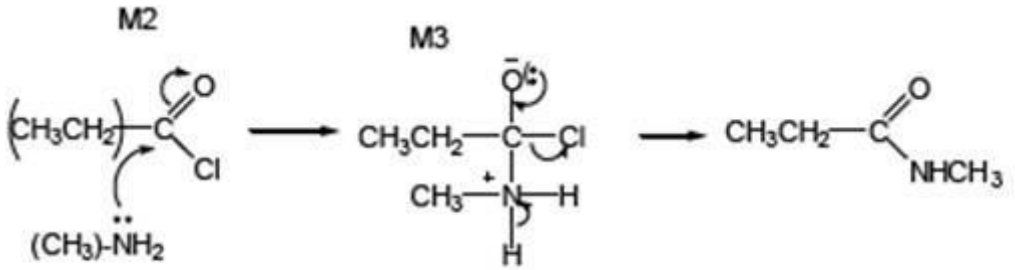
M3 Stronger forces (of attraction) in polyamides
Or H bonding is stronger
(must be a comparison of correct forces to score M3)

Do not award if refer to stronger bonds

1

(b) (i) (nucleophilic) addition elimination

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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 $\delta+$ on C=O loses **M2***

*If Cl lost with C=O breaking, max 1 for **M1***

***M3** for correct structure <u>with charges</u> 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

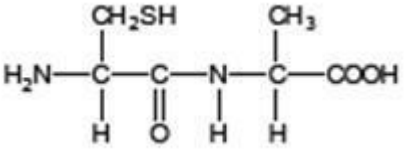
4

(ii) <u>N-methylpropanamide</u>

Not N-methylpropaneamide

1

(c)



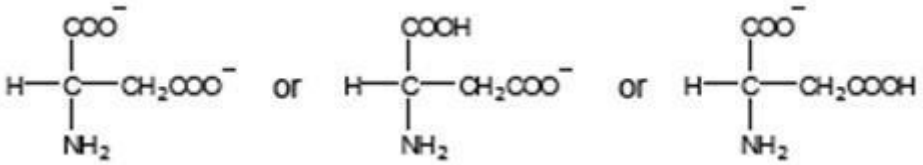
Allow –CONH– or –COHN–

1

(d) (i) <u>2-amino-3-hydroxypropanoic acid</u>

1

(ii)



Must be salts of aspartic acid

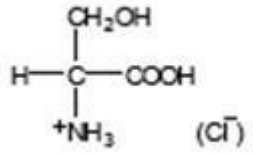
allow $–CO_2^-$

allow NH_2–

1

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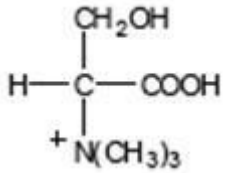
(iii) Penalise use of aspartic acid once in d(iii) and d(iv)



allow $-CO_2H$
allow $^+NH_3-$
don't penalize position of + on NH_3

1

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



(Br^-)

allow $-CO_2^-$
must show C-N bond
don't penalize position of + on $N(CH_3)_3$

1

[16]

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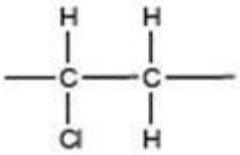
Q2.

(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 C_2H_5OH

NB Two ethanols

1

H_2O

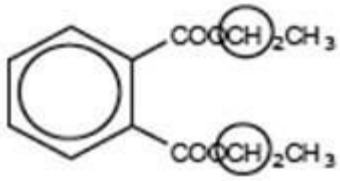
but only one water

1

(ii) 6 or six

1

(iii)

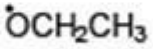


Ignore overlap with O to the left or H to the right, but must only include this one carbon. either or allow both (as they are identical)

1

(d)

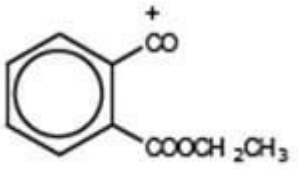




$[DEP]^{+\cdot}$

OR $[C_{12}H_{14}O_4]^{+\cdot} \rightarrow [C_{10}H_9O_3]^{+} + [C_2H_5O]^{\cdot}$

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Allow + on C or O in

1

Dot must be on O in radical

1

(e) (i) Rate = k[DEP]

Must have brackets but can be ( )

1

(ii) Any **two** of

- experiment repeated/continued <u>over a long period</u>
- repeated by independent body/other scientists/avoiding bias
- investigate breakdown products
- results made public

Not just repetition

Ignore animal testing

2 max

[11]

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