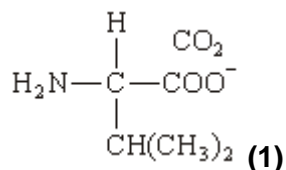


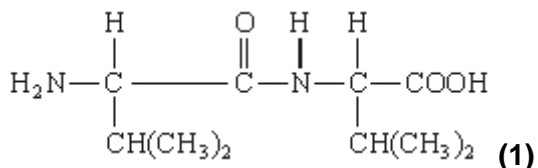
M1.

(a) (i)



ignore Na⁺ unless covalently bonded

(ii)



must be dipeptide, not polymer nor anhydride

allow -CONH- or -COHN-

allow zwitterion

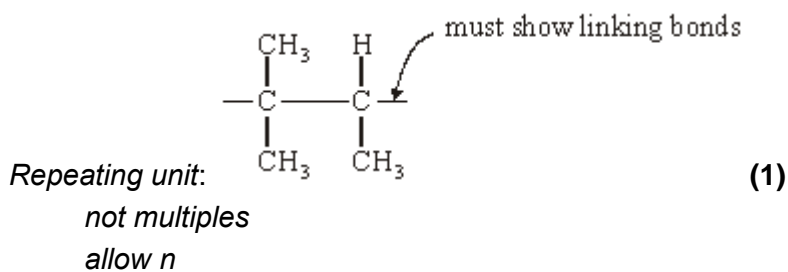
(iii) hydrogen bonding (1)

QL

Allow with dipole-dipole or v derWaals, but not dipole-dipole etc alone

3

(b) (i) *Type of polymerisation: addition(a)* (1)



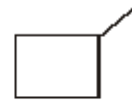
(ii) $\text{CH}_3\text{CH}=\text{CHCH}_2\text{CH}_3$ (1) C_2H_5

(iii)

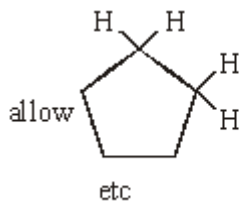


(1)

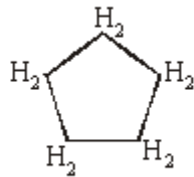
or



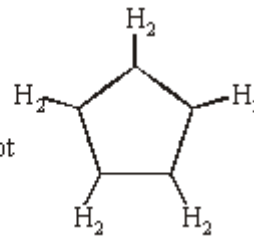
etc



or



but not



4

[7]

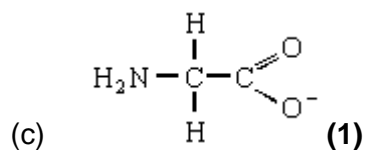
M2. (a) 2-amino(e) propanoic acid (1)

1

(b) (i) molecules with same structure / structural formula (1)
but with bonds (**atoms or groups**) arranged differently in space (3D) (1)

(ii) Plane polarised light (1)
Rotated (equally) in opposite directions (1)

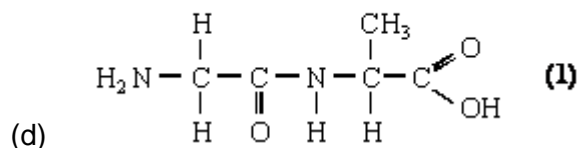
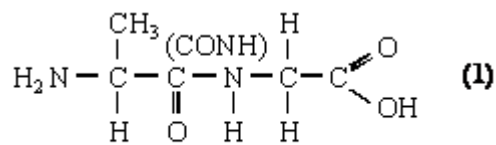
4



allow $H_2NCH_2COO^-$

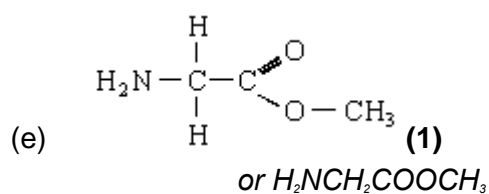
Penalise NH_2^- and OH^- once per paper
but CH_3^- is allowed

1



Not anhydrides; not repeating units

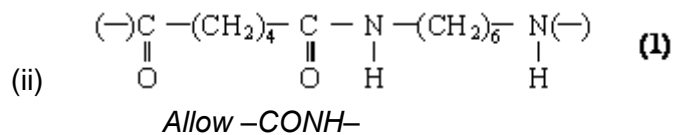
2



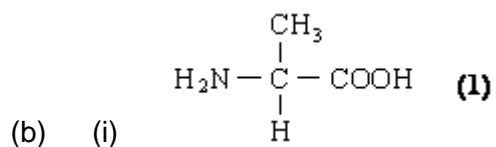
1

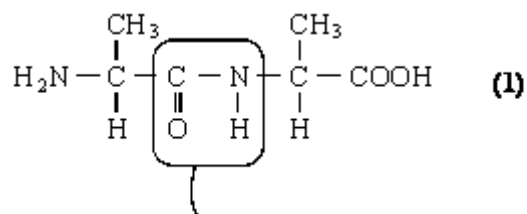
[9]

- M3.** (a) (i) hexane-1,6-diamine or 1,6-diaminohexane (**allow ammine**)
or 1,6 hexan(e)diamine **(1)**



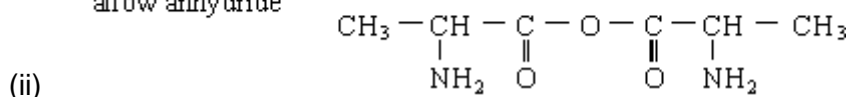
2





peptide link essential : the rest is consequential on b(i)
(allow CONH)

allow anhydride



2

(c) (i) quaternary ammonium bromide salt (1)

(not ion, not compound)

Allow quarternery

(ii) *Reagent:* CH₃Br or bromomethane (1)

penalise CH₃Cl but allow excess for any halomethane

Condition: excess (CH₃Br) (1)

(iii) nucleophilic substitution (1)

4

[8]