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

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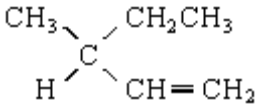
Name of the Student:_____
Max. Marks : 26 Marks **Time : 26 Minutes**

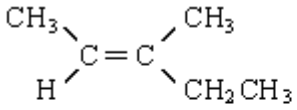
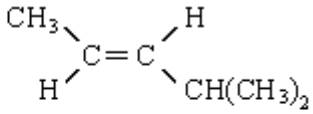
Mark Schemes

Q1.

(a) *Structure of* **P**:


(1)

Structures of **Q** and **R**:


and


NOT C_3H_7

(1) **(1)**

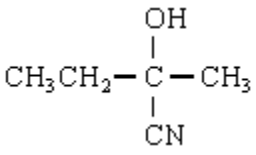
Q and R in any order

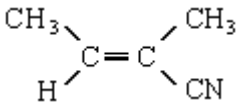
3

(b) (i) *Racemic mixture*: <u>equal</u> mixture of optical isomers / enantiomers
OR in explanation

Explanation: planar (>C=O) **(1)**
attack from either side is equally likely **(1)**

(ii) *Reagent **S***: HCN or (KCN / HCl **or** H_2SO_4) **(1)**

*Compound **T***:  **(1)**

*Compound **U***:  **(1)**

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Q2.

B

[1]

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Q3.

(a) 1, 4-diaminobutane or butane -1, 4-diamine **(1)**

A: $BrCH_2CH_2Br$ **or** $ClCH_2CH_2Cl$ **(1)**

B: $NC\ CH_2CH_2CN$

Step 1: Br_2 or Cl_2 **(1) (ignore aq)**

Step 2: KCN **(1) (NOT HCN)**

Step 3: H_2 / Ni **or** $LiAlH_4$ **or** Na / C_2H_5OH **(1) (NOT $NaBH_4$)**

Hydrogenation only for H_2 / Ni, **or** nucleophilic addition only for $LiAlH_4$**(1)**

OR reduction or addition

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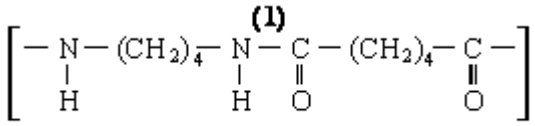

(1)

(b) **(1)**

QL hydrogen bonding **(1)**

Polarity of H-bonding shown or discussed **(1)**

4

(c) Polyamides / peptide link can be hydrolysed **(1)**

OR polyalkenes cannot be hydrolysed

QL OH^- attacks peptide link or $C^{\delta+}$ **(1)**

poly(ethene) non-polar **(1)**

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Q4.

A

[1]

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Q5.

C

[1]

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