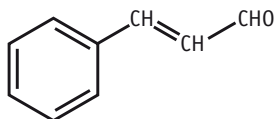


Chapter 7 Synthesis

Print out and complete this worksheet to generate a summary for Chapter 7.

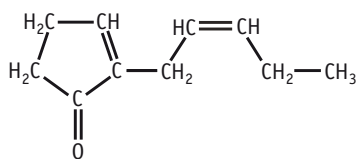
1 a Identify the functional groups in compounds **A**, **B** and **C**.

Compound **A**:



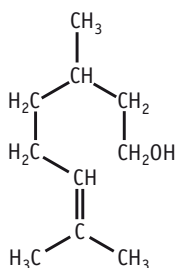
.....

Compound **B**:



.....

Compound **C**:



.....

b (i) Identify a chemical that would react with all three compounds **A**, **B** and **C**.

.....

(ii) Draw the organic compound formed when compound **B** reacts with the reagent identified in part **b (i)**.

c Identify a reagent that reacts with compounds **A** and **C** but not with compound **B**.

.....

d Identify a reagent that reacts with compound **A** only.

.....

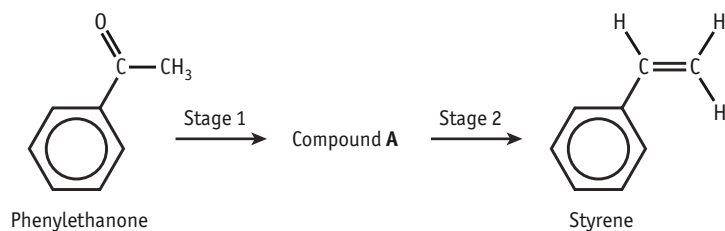
e Identify a reagent that reacts with compound **C** only.

.....

Chapter 7 Synthesis

2 This question is about multi-stage syntheses.

a



(i) Identify compound A

(ii) What reagents and conditions are required to bring about stage 1?

Reagents:

.....

Conditions:

.....

Equation for stage 1:

(iii) What reagents and conditions are required to bring about stage 2?

Reagents:

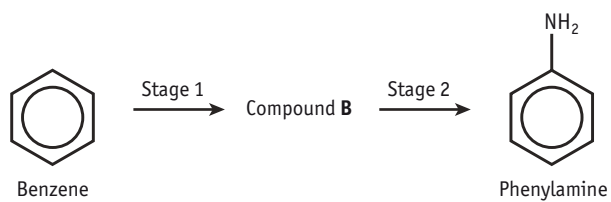
.....

Conditions:

.....

Equation for stage 2:

Chapter 7 Synthesis

b

(i) Identify compound **B**

(ii) What reagents and conditions are required to bring about stage 1?

Reagents:

.....

Conditions:

.....

Equation for stage 1:

(iii) What reagents and conditions are required to bring about stage 2?

Reagents:

.....

Conditions:

.....

Equation for stage 2:

Chapter 7 Synthesis



(i) Identify compound **C**

(ii) What reagents and conditions are required to bring about stage 1?

Reagents:

.....

Conditions:

.....

Equation for stage 1:

(iii) What reagents and conditions are required to bring about stage 2?

Reagents:

.....

Conditions:

.....

Equation for stage 2:

Chirality in pharmaceutical synthesis

3 Explain what is meant by each of the following terms:

a chiral centre

.....

.....

b racemic mixture

.....

.....

Chapter 7 Synthesis

c non-superimposable

.....

.....

d stereoselectivity

.....

.....

e chiral catalyst

.....

.....

- 4** Explain why chiral molecules prepared synthetically in the laboratory might differ from chiral molecules produced naturally by enzymes in living systems.

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- 5** Explain the problems and the costs associated with the laboratory synthesis of a pharmaceutical.

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- 6** State three ways in which the modern synthesis of a pharmaceutical can be carried out to produce a single optical isomer.

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