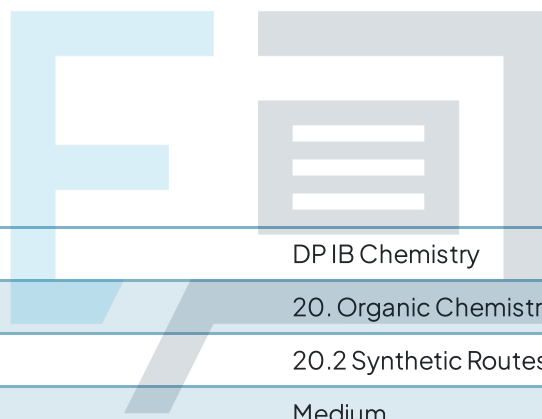




# 20.2 Synthetic Routes

## Question Paper



Course	DP IB Chemistry
Section	20. Organic Chemistry (HL only)
Topic	20.2 Synthetic Routes
Difficulty	Medium

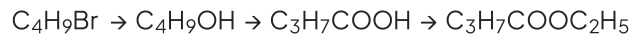
# Exam Papers Practice

To be used by all students preparing for DP IB Chemistry HL  
Students of other boards may also find this useful

### Question 1

The synthesis of ethyl butanoate can be carried out in three steps:

I            II            III



What is the correct classification of the steps?

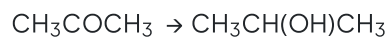
	I	II	III
A	substitution	oxidation	condensation
B	addition	substitution	condensation
C	oxidation	substitution	condensation
D	substitution	oxidation	substitution

[1 mark]

### Question 2

The synthesis of 2-propyl propanoate can be carried out in two steps:

I



II



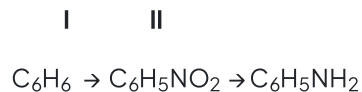
What are the reagents needed in I and II?

	I	II
A	potassium dichromate(VI)	sulfuric acid, propanoic acid
B	sodium borohydride	sulfuric acid, propanoic acid
C	sodium borohydride	sulfuric acid, ethanoic acid
D	potassium dichromate(VI)	sulfuric acid, ethanoic acid

[1 mark]

### Question 3

The synthesis of phenylamine can be carried out in two steps:



What are the reaction types in I and II?

	I	II
A	oxidation	substitution
B	addition	substitution
C	substitution	reduction
D	oxidation	reduction

[1 mark]

### Question 4

Which of the following reactions produces **only** pentan-2-ol?

- A. Water and pent-1-ene
- B. 1-bromopentane and ethanolic NaOH
- C. Water and pent-2-ene
- D. 2-bromopentane and ethanolic NaOH

[1 mark]

### Question 5

Which compound could be **X** in this two step reaction pathway?



- A.  $\text{C}_2\text{H}_5\text{CN}$
- B.  $\text{C}_3\text{H}_7\text{Cl}$
- C.  $\text{C}_3\text{H}_6\text{Cl}_2$
- D.  $\text{C}_2\text{H}_5\text{COOH}$

[1 mark]