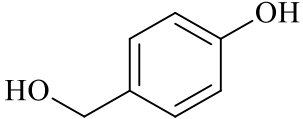
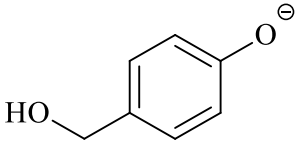
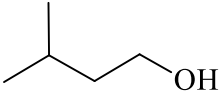
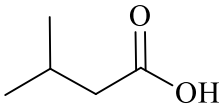
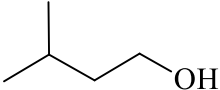


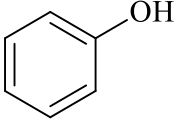
Marks
3

- Complete the following table. Make sure you give the name of the starting material where indicated.

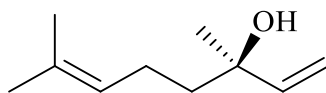
STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
		
		
	concentrated H ₂ SO ₄	

Marks
1

- Complete the following table. Make sure you give the name of the starting material where indicated.

STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	NaOH	

- The structure of (–)-linalool, a commonly occurring natural product, is shown below.



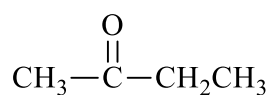
Marks
2

Give the constitutional formula of the organic product formed from (–)-linalool in each of the following reactions. NB: If there is no reaction, write "no reaction".

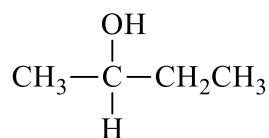
Reagents / Conditions	Constitutional Formula of Product
$\text{Na}_2\text{Cr}_2\text{O}_7$ in aqueous acid	
Na, then CH_3Br	

Marks
4

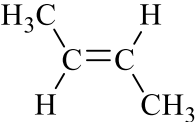
- Butanone is treated first with lithium aluminium hydride, LiAlH_4 , in dry ether and then with aqueous acid to yield the alcohol, **A**.



butanone

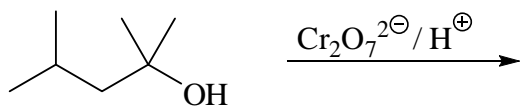
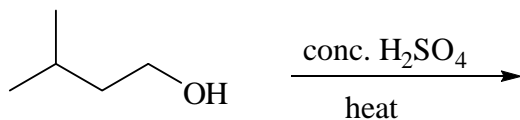
**A**

A is treated with concentrated sulfuric acid to give mainly the alkene **B** and two other alkenes **C** and **D**. Alkenes **B** and **C** are diastereomers, **B** and **D** (and **C** and **D**) are constitutional isomers. Give the structures for **C** and **D** and give systematic names for **B**, **C** and **D**.

B 	C	D
Name:	Name:	Name:

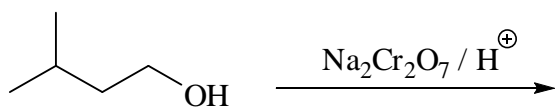
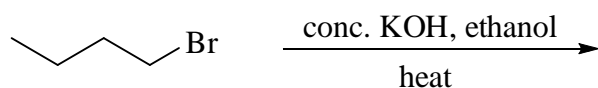
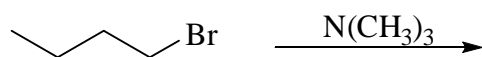
Marks
3

- Give the name of the starting material where indicated and the constitutional formula(s) of the major organic product(s) formed in each of the following reactions. NB: if there is no reaction, write "no reaction".

**Name:**

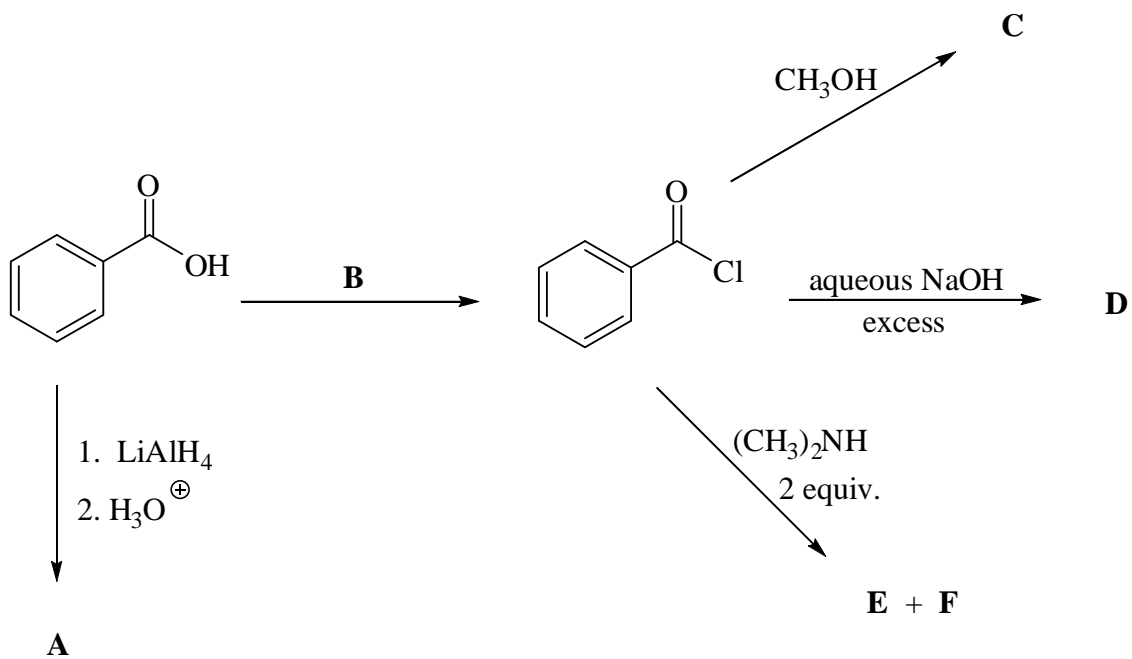
Marks
5

- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.

**Name:****Name:**

Marks
6

- Consider the following reaction sequence.

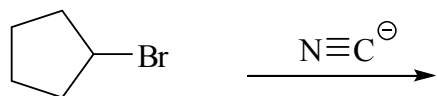
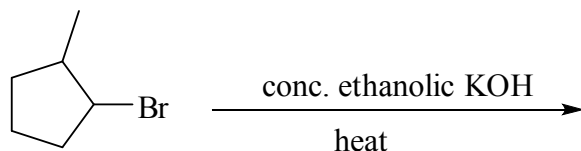


Give the reagent **B** and draw the constitutional formulas of the major organic products, **A**, **C**, **D**, **E** and **F**, formed in these reactions.

A	D
B	E
C	F

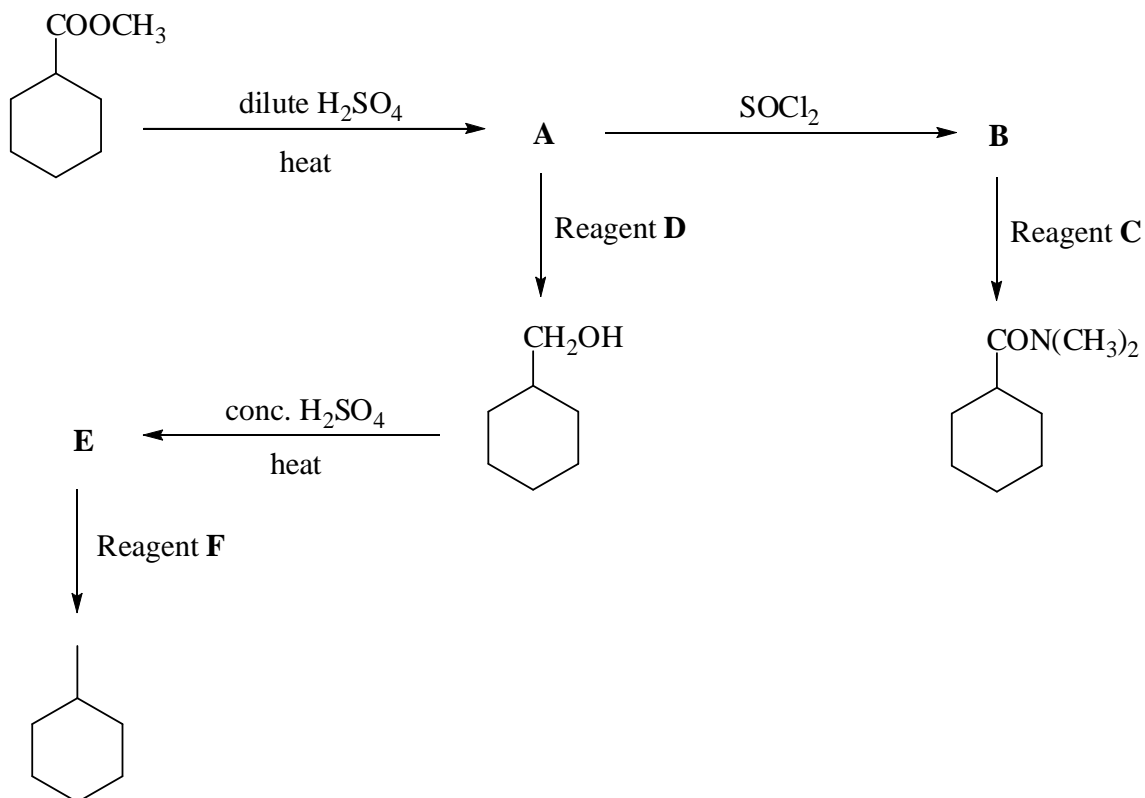
Marks
3

- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.

**Name:**

Marks
6

- Consider the following reaction sequence.

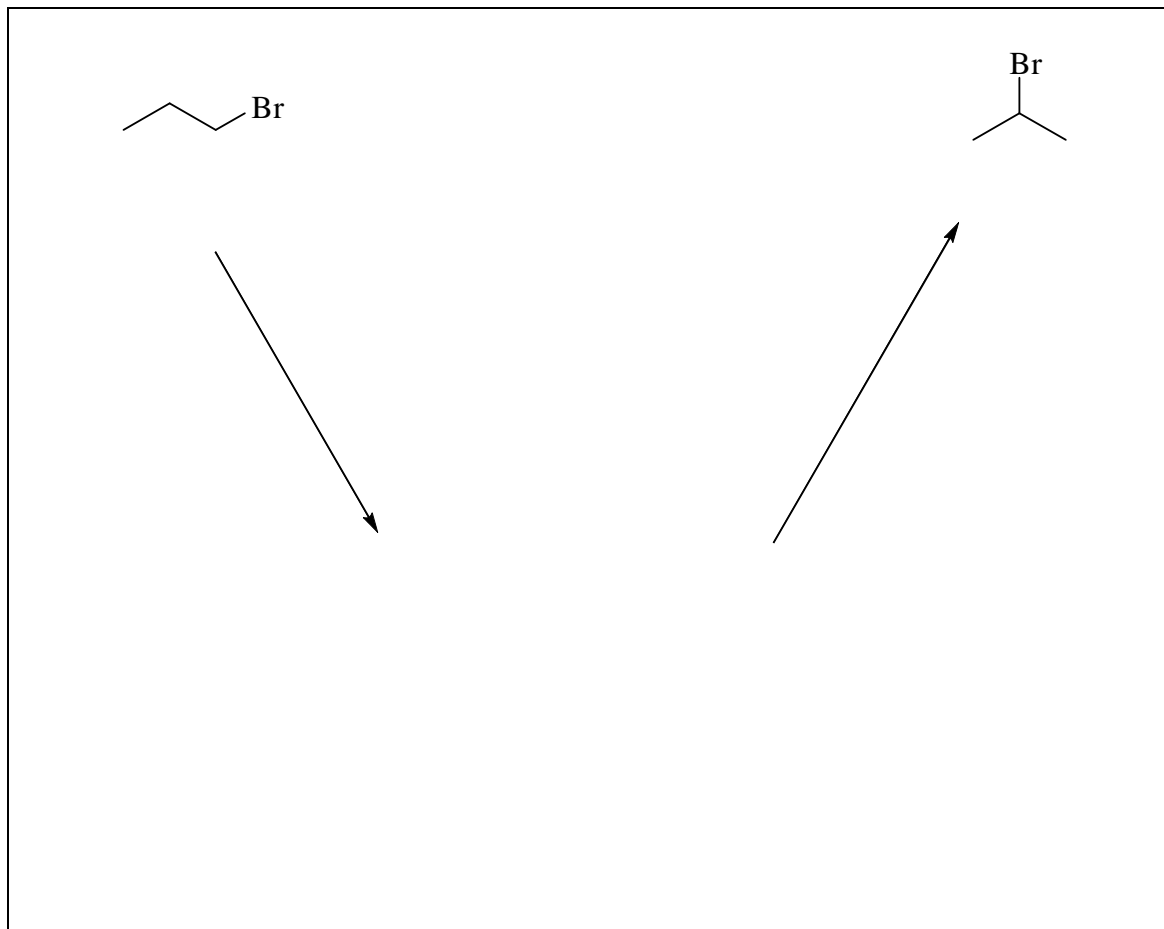


Give the reagents **C**, **D** and **F** and draw the structures of the major organic products, **A**, **B** and **E**, formed in these reactions.

A	D
B	E
C	F

Marks
5

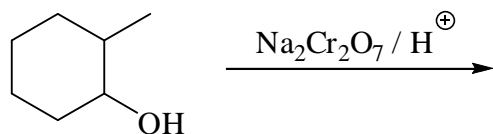
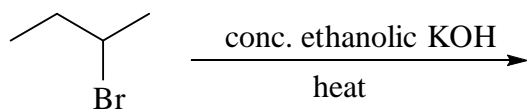
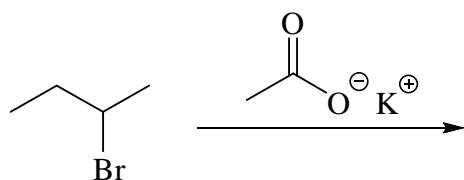
- Show clearly the reagents you would use to carry out the following chemical conversion. Two steps are required. Give the structure of the intermediate compound.



How could you distinguish between the starting material and the product by ^{13}C NMR spectroscopy?

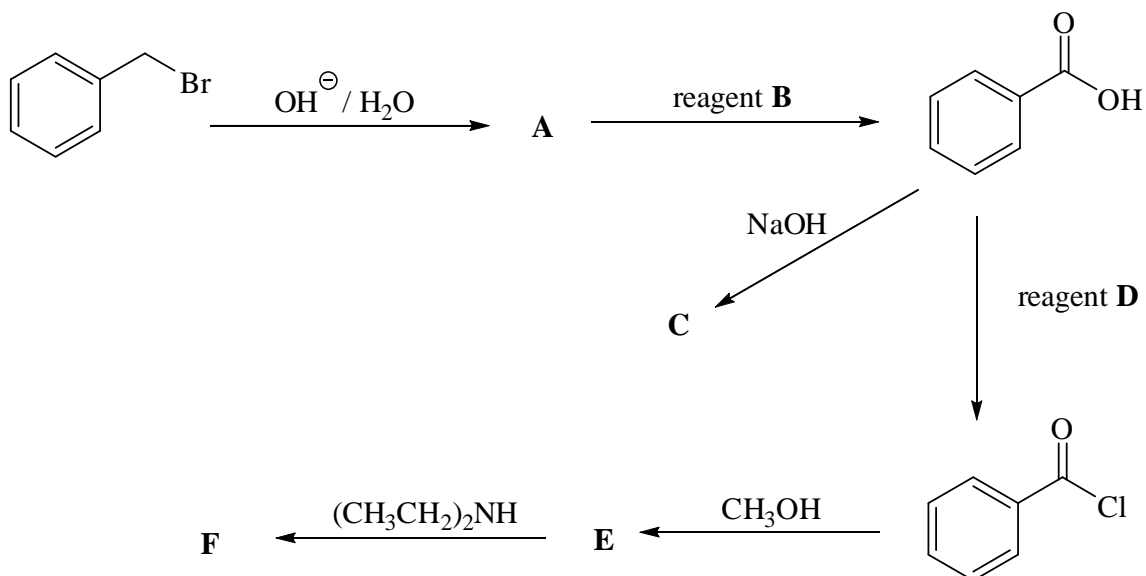
Marks
5

- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.

**Name:****Name:**

Marks
6

- Consider the following reaction sequence.

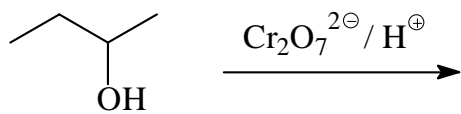
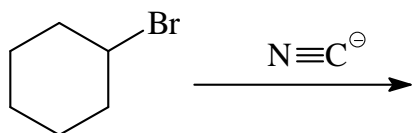
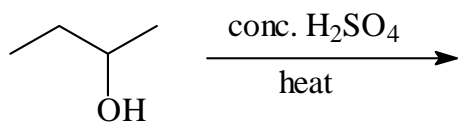


Give the reagents **B** and **D** and draw the structures of the major organic products, **A**, **C**, **E** and **F**, formed in these reactions.

A	D
B	E
C	F

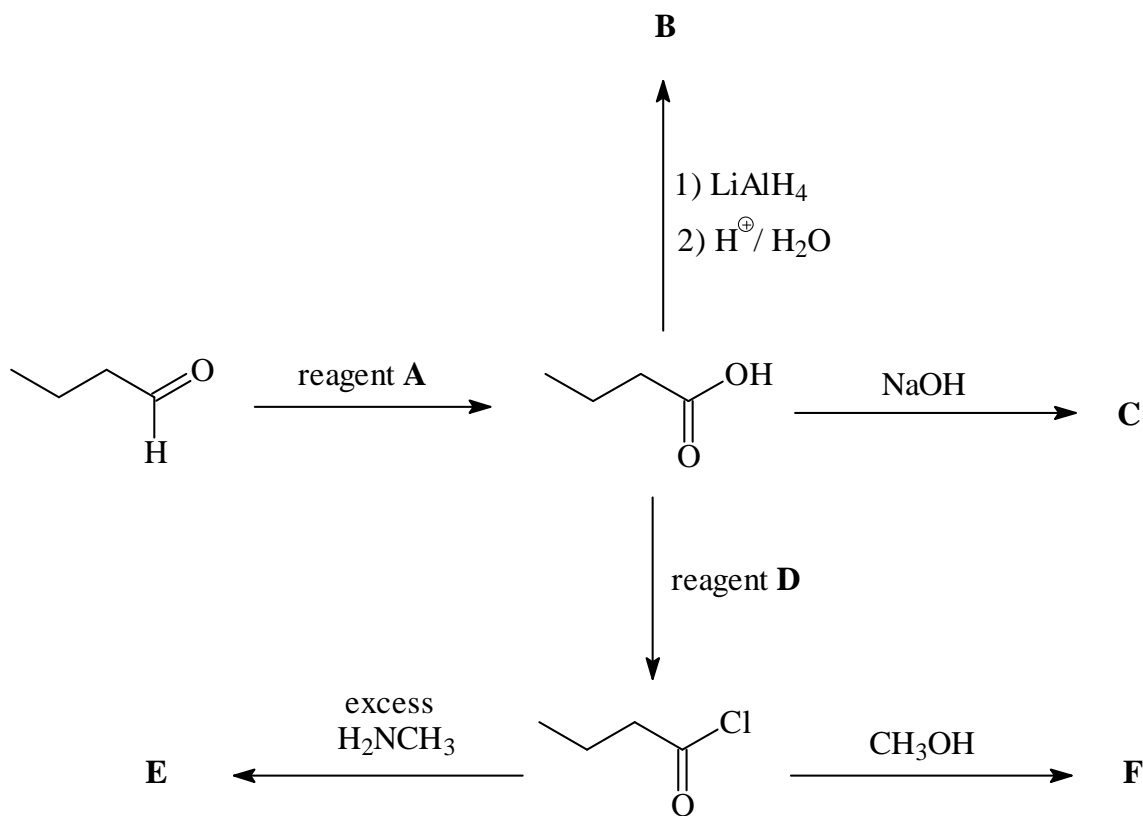
Marks
5

- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.

**Name:****Name:**

Marks
6

- Consider the following reaction sequence.

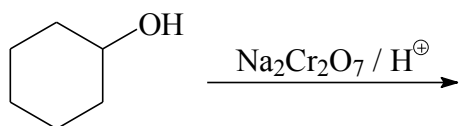
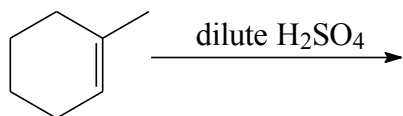


Give the reagents **A** and **D** and draw the structures of the major organic products, **B**, **C**, **E** and **F**, formed in these reactions.

A	D
B	E
C	F

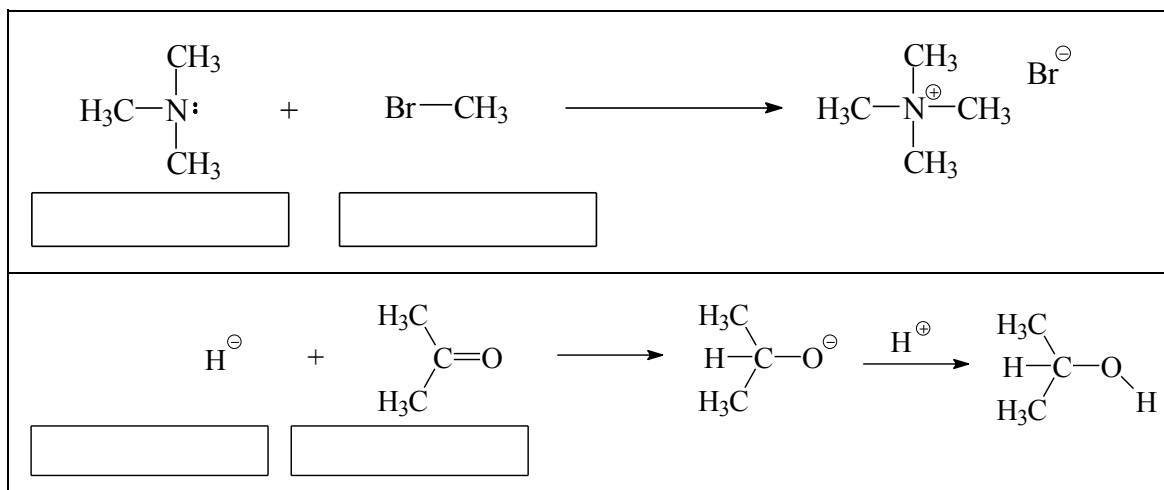
Marks
5

- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.

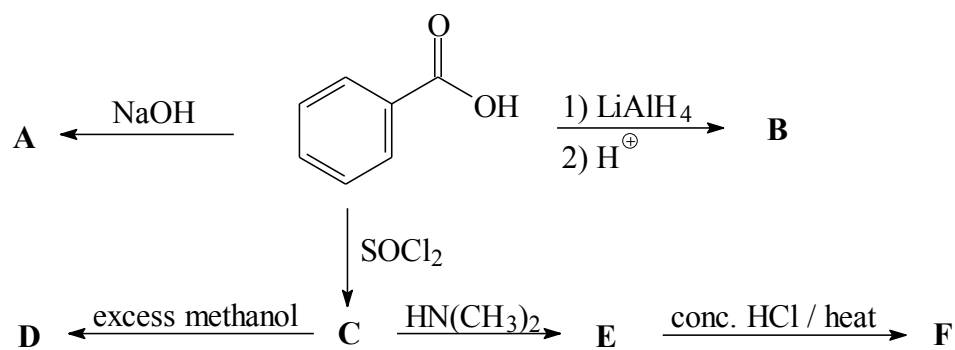
**Name:****Name:**

Marks
4

- Classify the starting materials of the following reactions as nucleophile or electrophile and indicate with δ^{\oplus} and δ^{\ominus} the polarisation of the C–Br and C=O bonds.

**6**

- Consider the following reaction sequence.



Draw the structures of the major organic products, A-F, formed in these reactions.

A	D
B	E
C	F