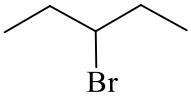
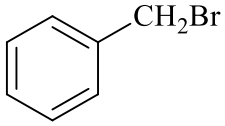
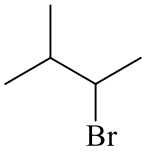
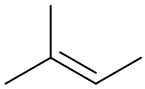
Marks 2

- 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)
 **Name:**	$N(CH_3)_3$	

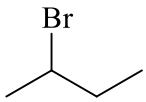
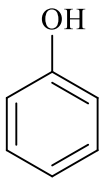
Marks 2

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

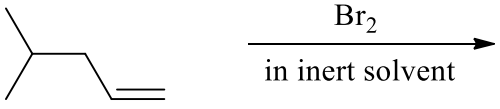
STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	KCN / ethanol (solvent)	
		

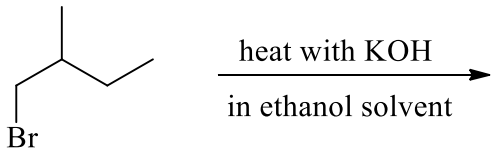
Marks 2

- A number of functional groups react with hydroxide ion. Complete the following table. NB: If there is no reaction, write "no reaction".

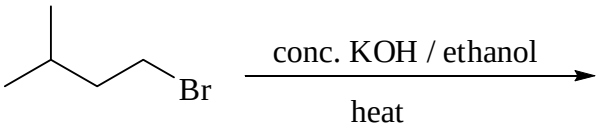
Starting Compound	Reaction Conditions	Organic Product(s)
	1 M aqueous NaOH	
	1 M aqueous NaOH	

• Give the major organic product(s) from the following reactions. Pay particular attention to the stereochemistry and/or the correct ionic from where relevant.	**Marks 2**



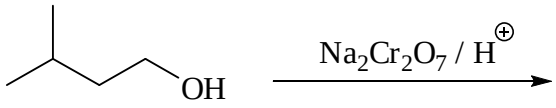


	Marks
• Give the name of the starting material where indicated and the constitutional formula(s) of the major organic product(s) formed in each of the following reactions. NB: if there is no reaction, write "no reaction".	**1**

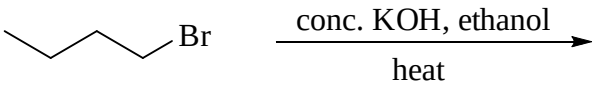


Marks 5

- 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.

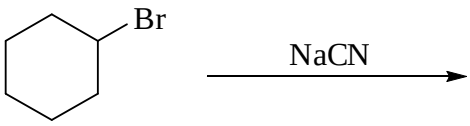


Name:



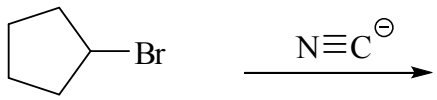
Name:

- Give the constitutional formula(s) of the organic products formed in each of the following reactions.

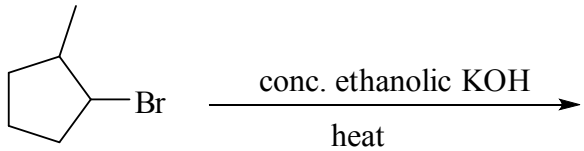


- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.

Marks 3

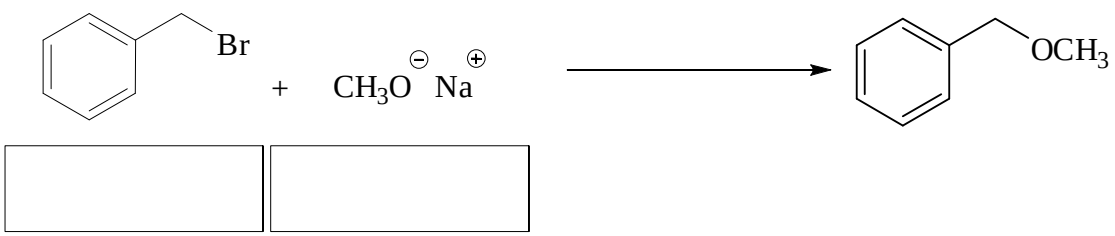


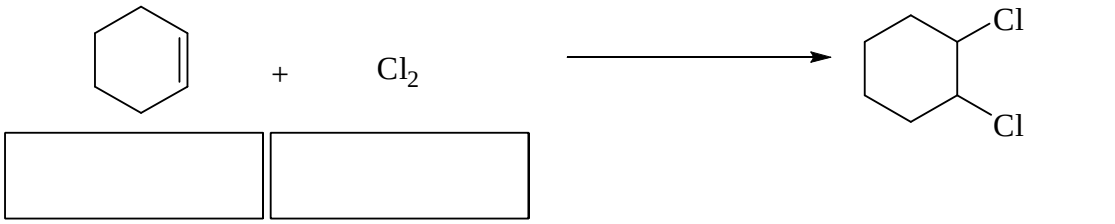
Name:



Marks 6

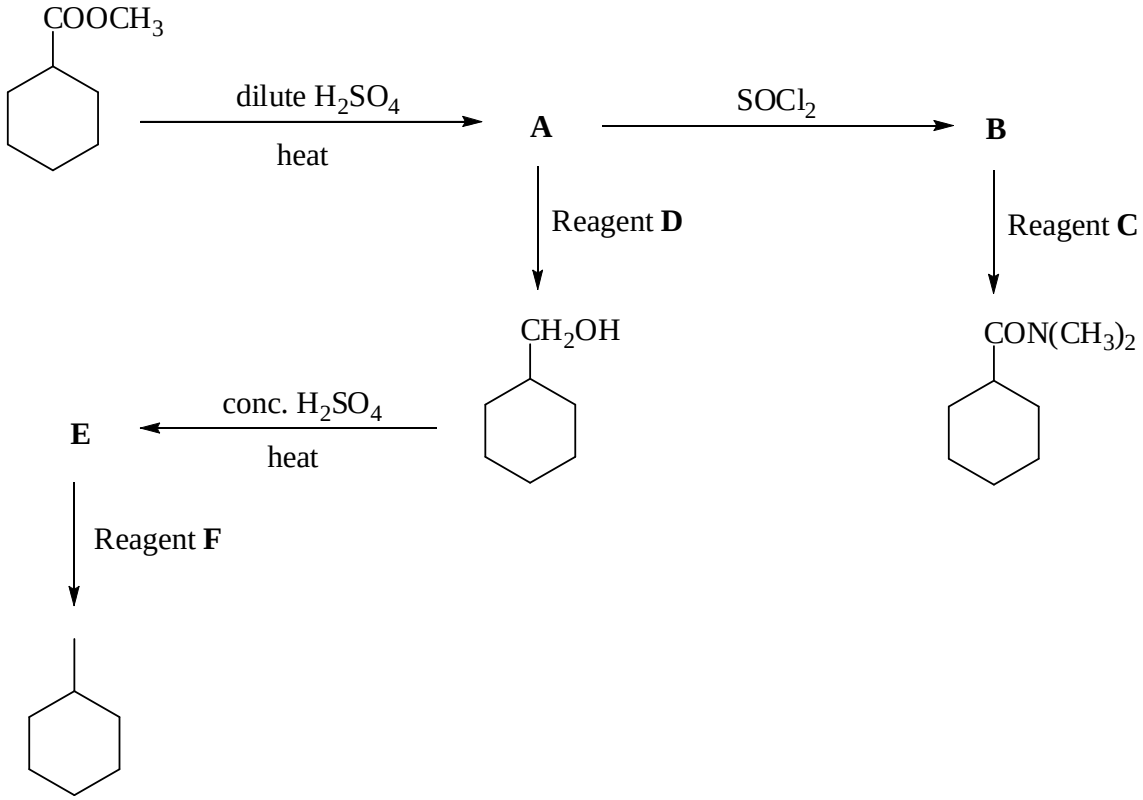
- Classify the starting materials for each of the following reactions as nucleophile and electrophile in the boxes provided and draw the structure of the product.





Marks 6

- Consider the following reaction sequence.

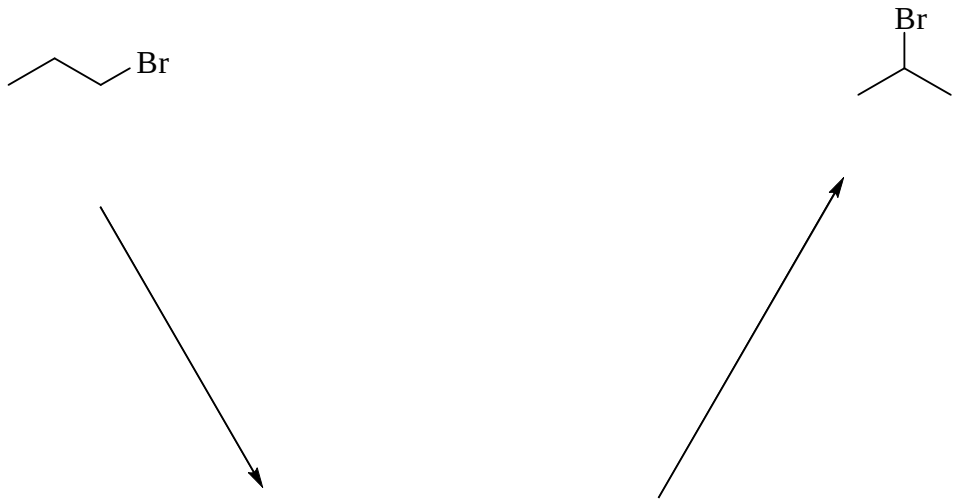


Give the reagents **C**, **D** and **F** and draw the structures of the major organic products, **A**, **B** and **E**, formed in these reactions.

A	**D**
B	**E**
C	**F**

Marks 5

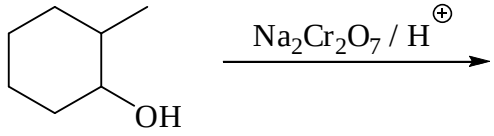
- Show clearly the reagents you would use to carry out the following chemical conversion. Two steps are required. Give the structure of the intermediate compound.



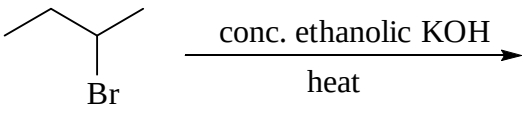
How could you distinguish between the starting material and the product by ^{13}C NMR spectroscopy?

Marks 5

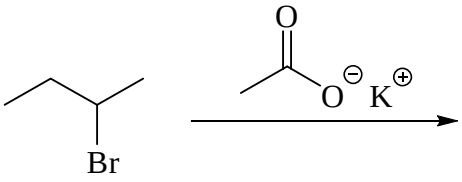
- Give the name of the starting material where indicated and the constitutional formula of the major organic product formed in each of the following reactions.



Name:

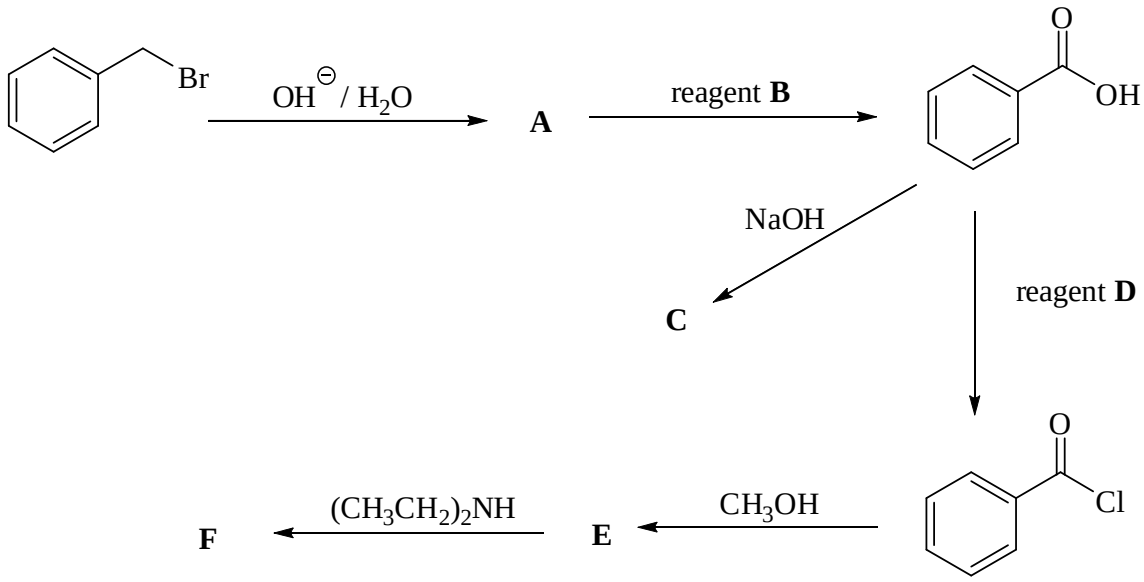


Name:



Marks 6

- Consider the following reaction sequence.

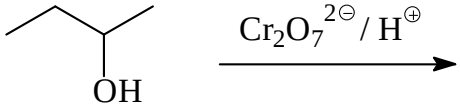


Give the reagents **B** and **D** and draw the structures of the major organic products, **A**, **C**, **E** and **F**, formed in these reactions.

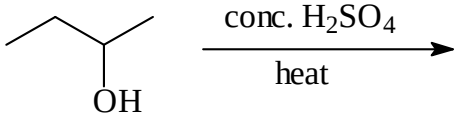
A	**D**
B	**E**
C	**F**

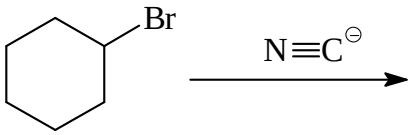
Marks 5

- 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:



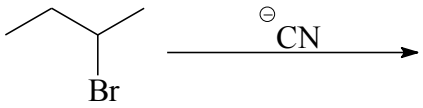


Name:

- 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.

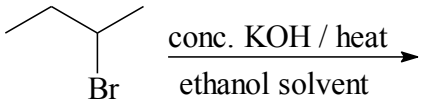
Marks

3

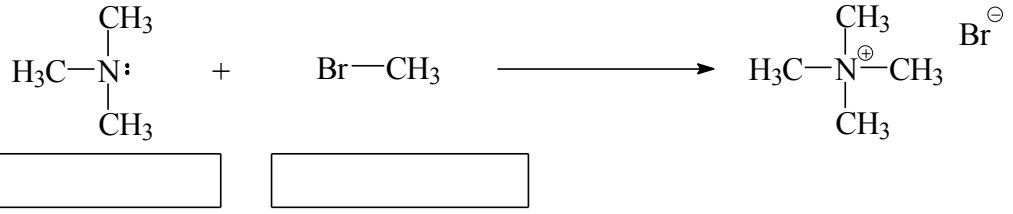


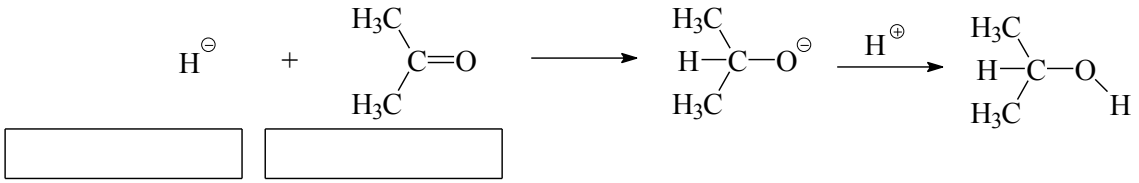
Name:

1

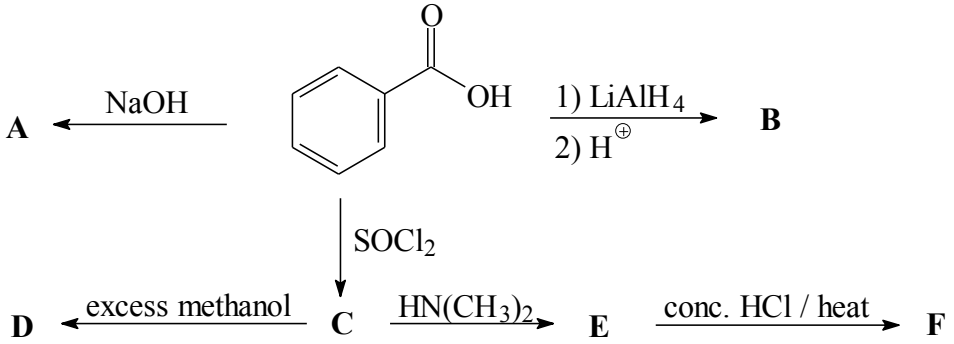


	Marks
• Classify the starting materials of the following reactions as nucleophile or electrophile and indicate with $\delta\oplus$ and $\delta\ominus$ the polarisation of the C–Br and C=O bonds.	4





	Marks
• Consider the following reaction sequence.	6



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

A	**D**
B	**E**
C	**F**