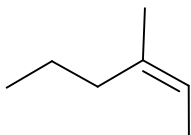


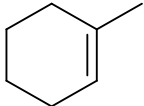
Marks
2

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

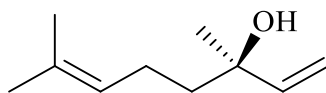
STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
 Name:	dilute H ₂ SO ₄	

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:	HBr / CCl ₄ (solvent)	

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

**Marks**
4

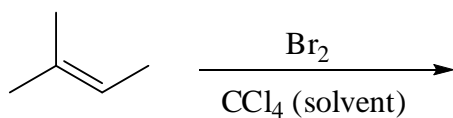
Is it possible to obtain (*Z*) and (*E*) isomers of (–)-linalool? Give a reason for your answer.

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
Br ₂ (in CCl ₄ as solvent)	
H ₂ / Pd-C catalyst	

Marks
2

- 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:**

- Draw the constitutional formula for each of the following compounds.

3

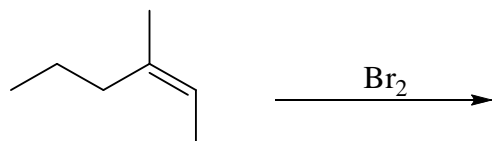
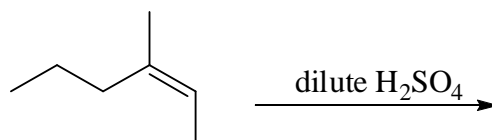
(E)-4-methylpent-2-ene

cis-1,3-dibromocyclopentane

(R)-2-chlorobutane

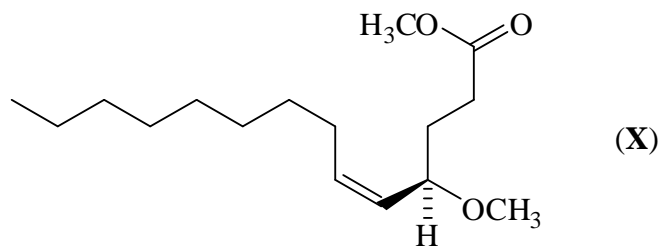
Marks
3

- 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
7

- Compound (**X**) is a derivative of a naturally occurring Japanese beetle pheromone.



What is the molecular formula of (**X**)?

What is the stereochemistry of the C–C double bond in (**X**)?

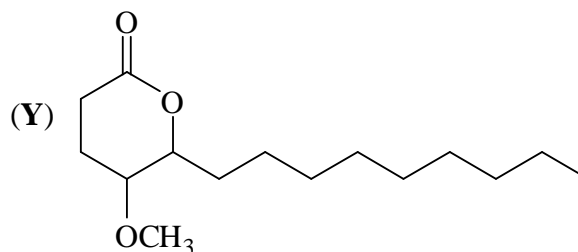
List the substituents attached to the stereogenic centre in descending order of priority according to the sequence rule.

highest priority

lowest priority

What is the absolute stereochemistry of (**X**)? Write (*R*) or (*S*).

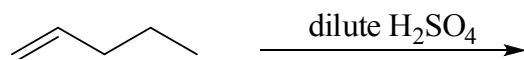
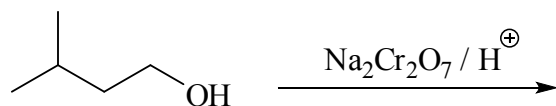
On heating with 4 M H₂SO₄, one of the products obtained is compound (**Y**), whose structure is shown on the right. Explain the formation of this product.



How many different stereoisomers are possible for compound (**Y**)?

Marks
4

- 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

- 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.



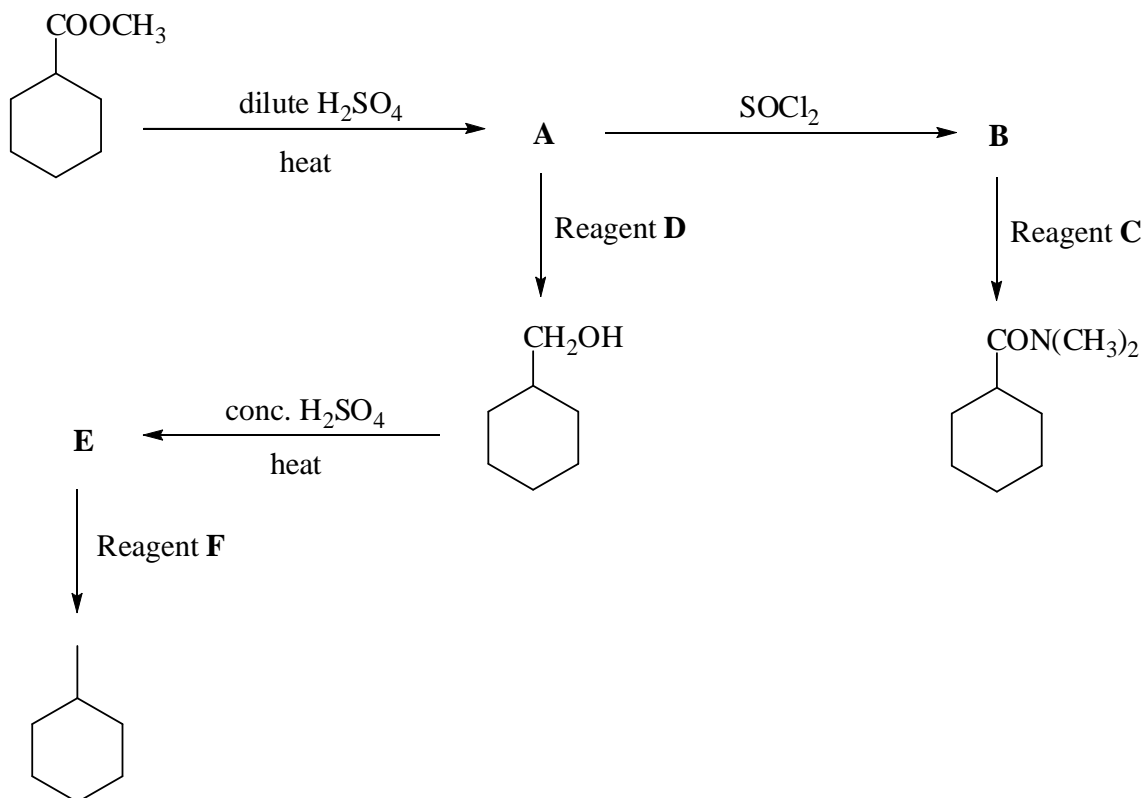
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Marks
6

- Consider the following reaction sequence.

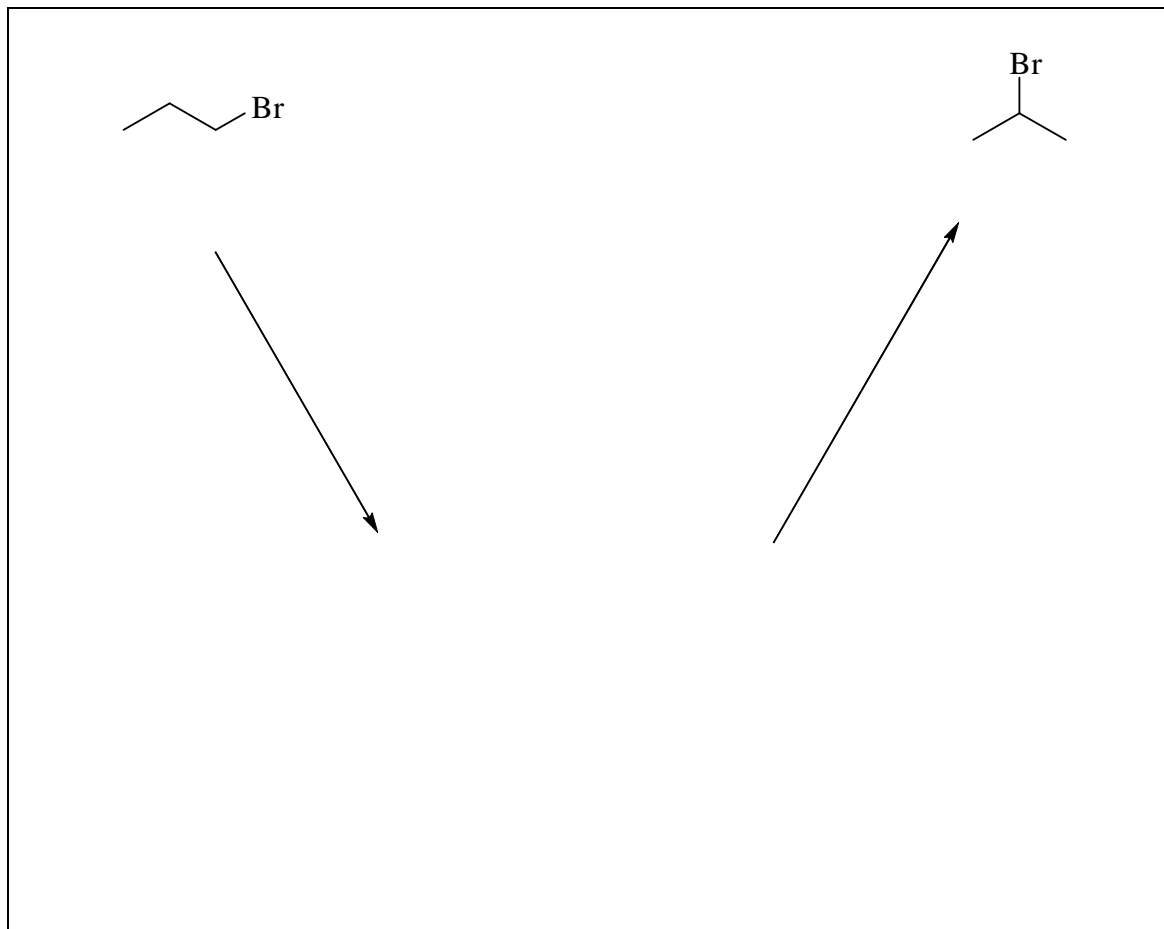


Give the reagents **C**, **D** and **F** and draw the structures of the major organic products, **A**, **B** and **E**, formed in these reactions.

A	D
B	E
C	F

Marks
5

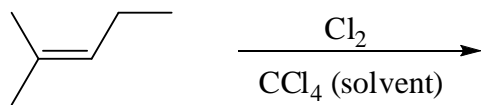
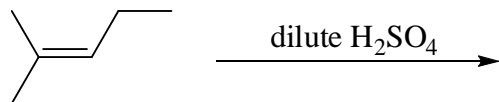
- Show clearly the reagents you would use to carry out the following chemical conversion. Two steps are required. Give the structure of the intermediate compound.



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

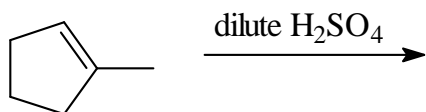
Marks
3

- 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:**

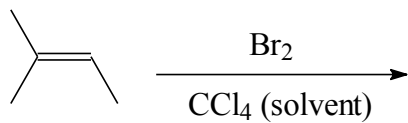
Marks
3

- 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
4

- 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.



Name:

