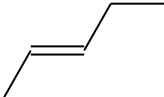
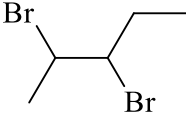


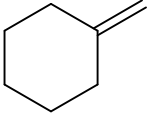
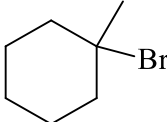
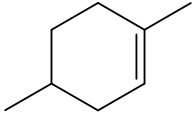
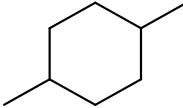
Marks
2

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

STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
 Name: (E)-2-pentene	Br_2 CCl_4 solvent	

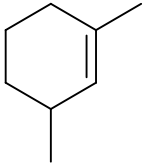
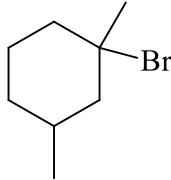
Marks
3

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

STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	HBr / CCl ₄ (solvent)	
 Name: 1,4-dimethylcyclohexene	H ₂ Pd/C catalyst	

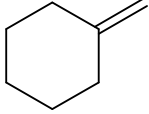
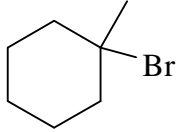
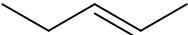
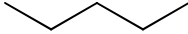
Marks
1

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

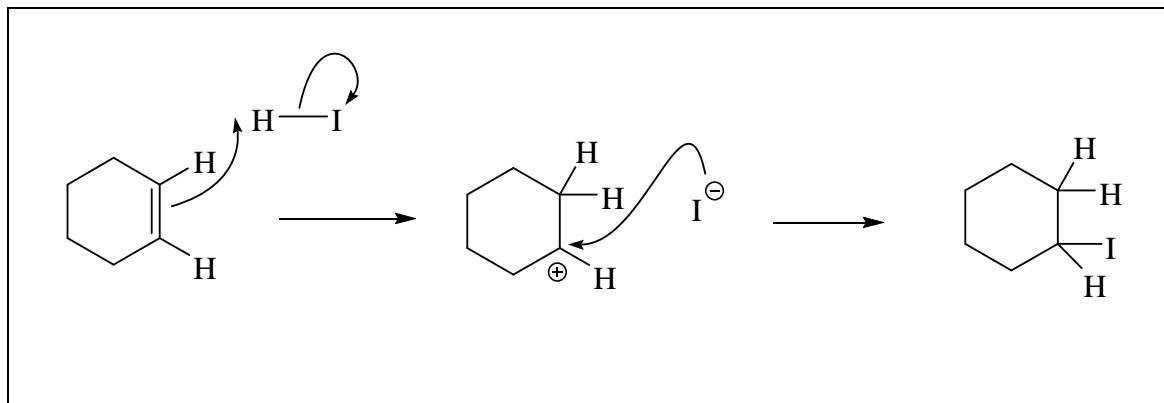
STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	HBr / CCl ₄ (solvent)	

Marks
2

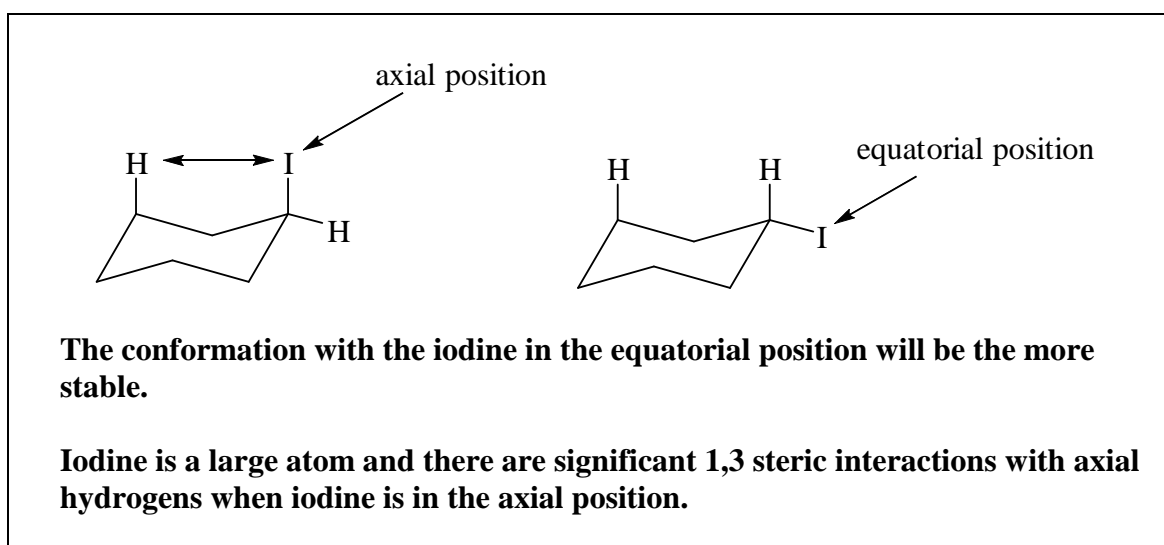
- Complete the following table. Make sure you complete the name of the starting material where indicated.

STARTING MATERIAL	REAGENTS/ CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	HBr / CCl ₄ (solvent)	
 Name: (<i>E</i>)-2-pentene	H ₂ /Pd	

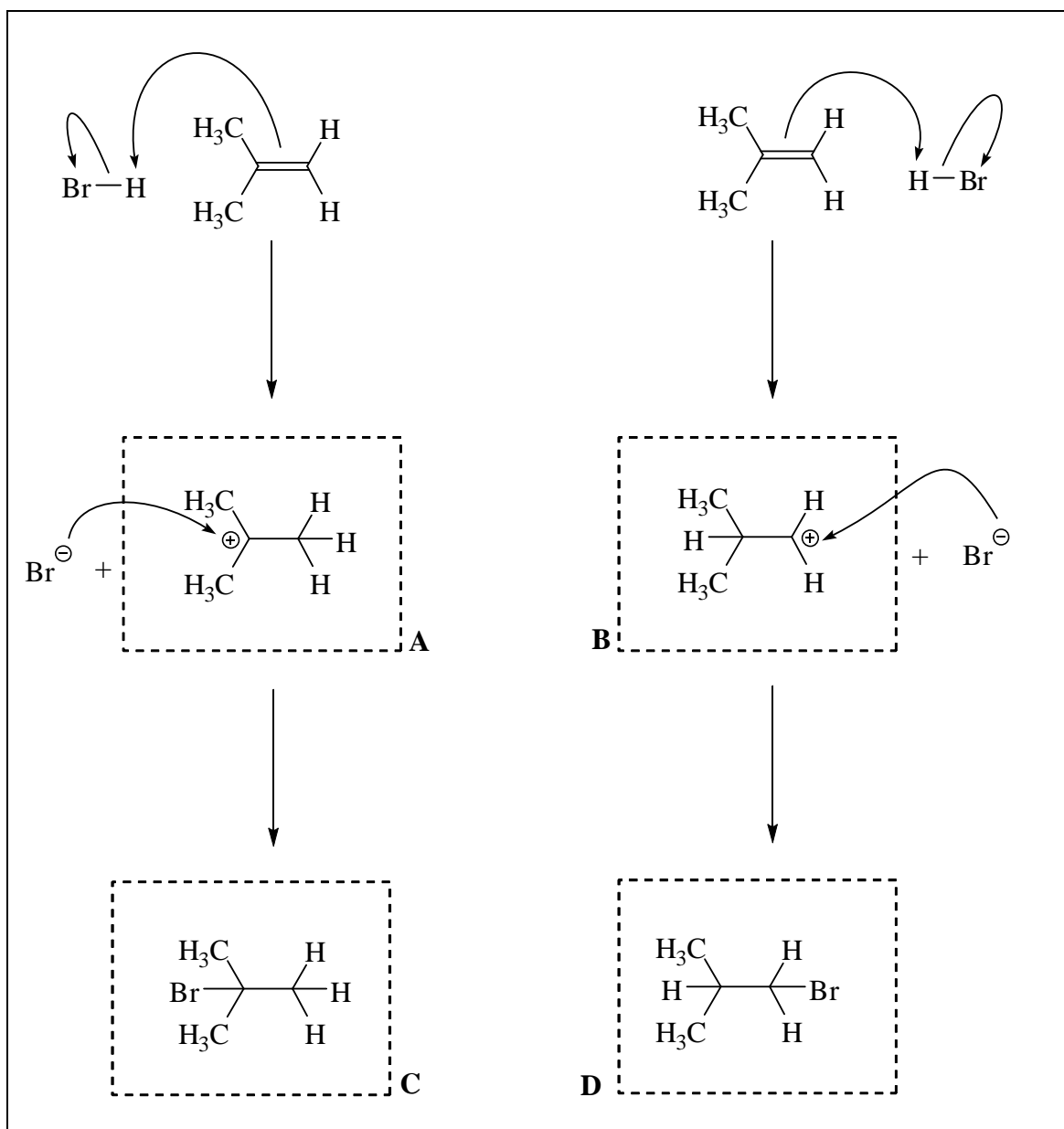
- Cyclohexene undergoes an electrophilic addition reaction with HI in CCl_4 solvent to give iodocyclohexane. Draw the mechanism of this reaction, using curly arrows to indicate the movement of electrons. Include structures for any relevant intermediates.



Draw the two chair conformations of iodocyclohexane and indicate which is likely to be more stable. Briefly explain the reason for your choice.



- When HBr adds to 2-methylpropene there are two possible products. Using the template below, draw the mechanism of this reaction to show the formation of both products, **C** and **D**. Use curly arrows to show the movement of electrons and draw the structures of the intermediates **A** and **B**.



Which product will be the major one? Explain why it will predominate.

C will be the major product as the carbocation intermediate along the path to its formation, A, is more stable than that, B, along the path to formation of D.

The tertiary carbocation A is more stable than the primary carbocation B.

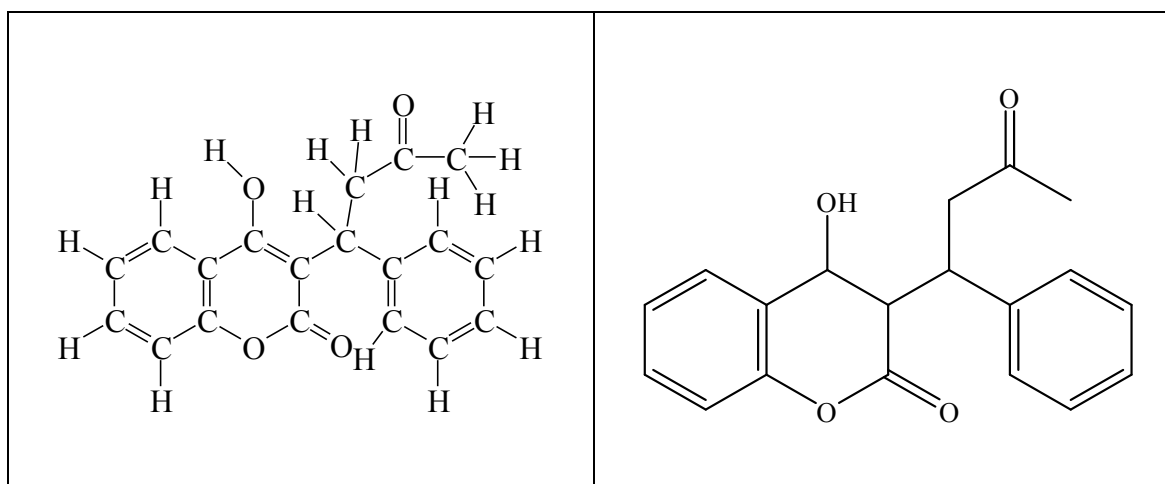
This results in the Markovnikov addition product C as the major product.

What is the name given to this type of reaction?

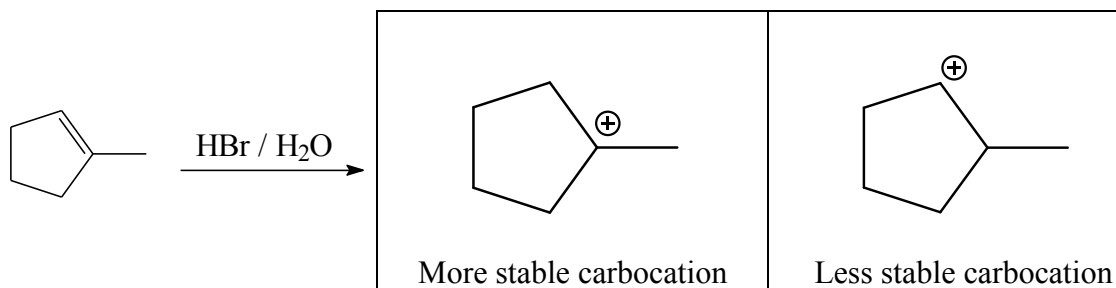
Electrophilic addition

Marks
1

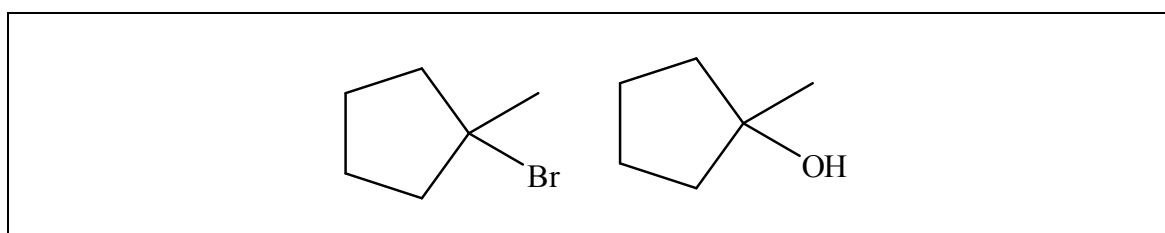
- A structural formula for Warfarin, an anticoagulant, showing all atoms and bonds is shown below. Draw a stick representation of the formula in the adjacent box.


4

- When 1-methylcyclopentene is treated with hydrogen bromide in water, two carbocations can be formed. Give the structures of these carbocations in the spaces below, indicating which is the more stable species.

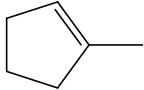
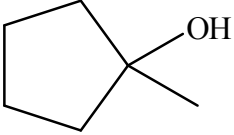
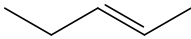


Give the constitutional formula(s) of the product(s) arising from the more stable carbocation in the above reaction.



Marks
2

- Complete the following table.

STARTING MATERIAL	REAGENTS/CONDITIONS	CONSTITUTIONAL FORMULA(S) OF MAJOR ORGANIC PRODUCT(S)
	H^{\oplus} / H_2O	 (Markovnikov product with OH added to more substituted end of double bond)
	H_2 / Pd	