

## Nazarov Reaction - Answer Sheet

5% of total							
Question	8.1	8.2	8.3	8.4	8.5	8.6	Total
Points	5	2	6	2	8	8	31
Score							

### 8.1 (5 pt)

**Draw** the pi molecular orbitals to describe the Nazarov reaction. **Fill in** the electrons into the respective energy levels. **Mark** with an X the **i)** HOMO (highest occupied molecular orbital) and **ii)** LUMO (lowest unoccupied molecular orbital).

			i)	ii)
$\psi_5$	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
$\psi_4$	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
$\psi_3$	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
$\psi_2$	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
$\psi_1$	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

### 8.2 (2 pt)

From the pi molecular orbitals you derived in **Task 8.1**, **predict** under which conditions the Nazarov reaction of the divinyl ketone will proceed in a disrotatory or conrotatory fashion. In the **table**, **mark** with an X the conditions under which the reaction is allowed.

	disrotatory	conrotatory
thermal		
photochemical		

## Theory



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# A8-2

English (Official)

**8.3** (6 pt)

**Draw** one possible structure for each of **A** and **B**, including stereochemistry.

**A**

**B**

**8.4** (2 pt)

**Choose** the reagent(s) from the list that would be suitable as **D**.

- $\text{H}_2\text{C}=\text{CHMgBr}$
- 1.  $\text{NaBH}_4$  2.  $\text{H}_2\text{C}=\text{CHLi}$
- $\text{H}_2\text{C}=\text{CHBr}$ ,  $\text{Pd}(\text{PPh}_3)_4$
- $\text{H}_2\text{C}=\text{CHMgBr}$ ,  $\text{CuI}$

**8.5** (8 pt)

**Give** the structures of intermediates **F**, **G**, and **H**, including their stereochemistry.

**F**

**G**

**H**

## Theory



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# A8-3

English (Official)

**8.6** (8 pt)

**Give** the structures of **J**, **K**, **L**, and **M**, including their stereochemistry.

**J**

**K**

**L**

**M**

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