

# UNIVERSITETET I OSLO

## Det matematisk-naturvitenskapelige fakultet

Eksamen i: KJM 3200/4200

Eksamensdag: 13. juni 2005

Tid for eksamen: 14.30-17.30

Oppgavesettet er på 2 sider

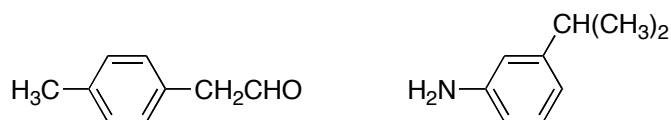
Vedlegg: Ingen

Tillatte hjelpemidler: Molekylbyggesett og enkel lommekalkulator

*Kontroller at oppgavesettet er komplett før du begynner å besvare spørsmålene.*

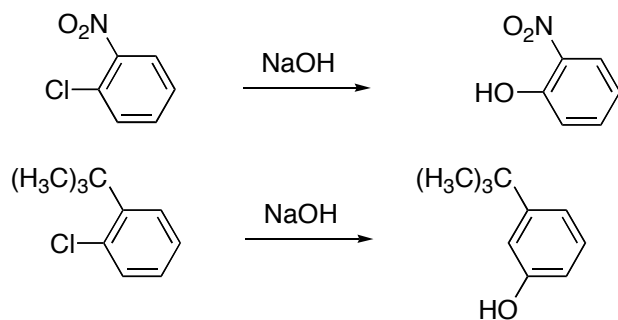
### Oppgave 1 (20 poeng)

Foreslå synteseer av følgende forbindelser fra benzen eller toluen. Det kan være flere muligheter, finn kortest mulig syntesevei.



### Oppgave 2 (20 poeng)

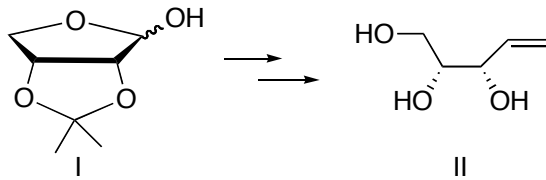
Vis mekanismer for følgende reaksjoner.



### Oppgave 3 (20 poeng)

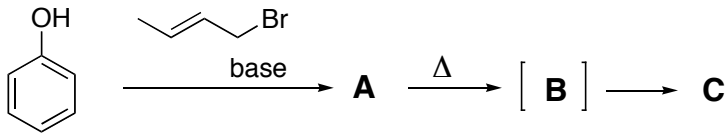
Tegn Fisher projeksjoner av en D-aldopentose og en L-ketoheksose.

Vis en mulig syntese av forbindelse **II** fra karbohydratderivatet **I**. Foreslå reagenser og vis eventuelle intermediater. Identifiser stereogene sentere i **II** og bestem absolutt stereokjemi.

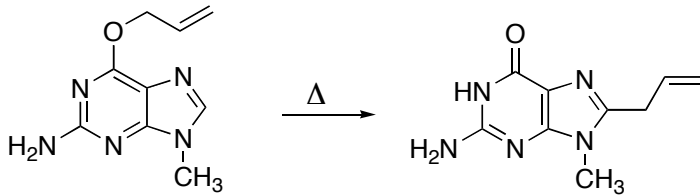


#### Oppgave 4 (20 poeng)

Vis strukturene til intermediatene **A** og **B** og produktet **C**. Reaksjonen fra **A** til **B** kalles [3,3]-omleiring, forklar.

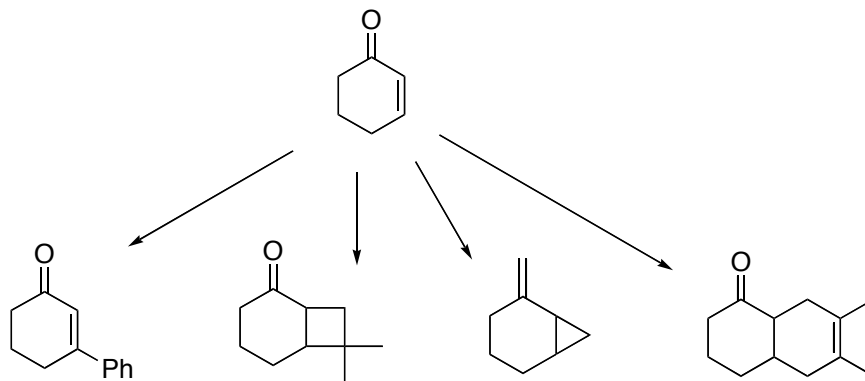


Foreslå mekanisme for følgende reaksjon.



#### Oppgave 5 (20 poeng)

Foreslå reagenser for følgende transformasjoner (en el. to-trinnsreaksjoner). Diskuter stereokjemi til produktene der det er relevant.



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## Det matematisk-naturvitenskapelige fakultet

Exam in: KJM 3200/4200

Date: June 13, 2005

Time: 14.30-17.30

The examination paper consists of 2 pages

Appendixes: None

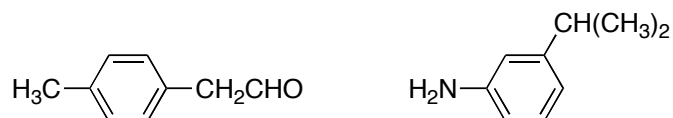
Permitted materials: Pocket calculator and molecular building system.

*Make sure that your copy of the examination paper is complete before answering.*

### Exercise 1 (20 points)

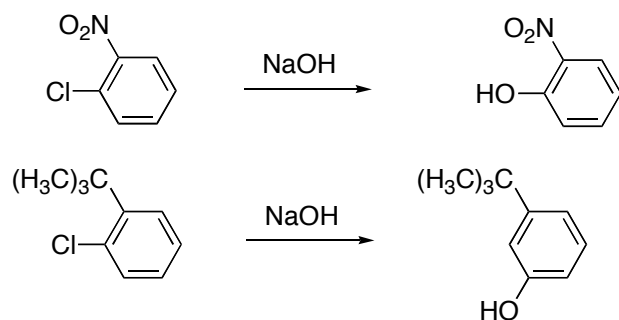
Propose syntheses for the following compounds starting with benzene or toluene.

There may be more than one solution, try to find the shortest route.



### Exercise 2 (20 points)

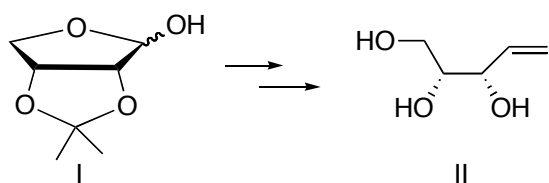
Show mechanisms for the following reactions.



### Exercise 3 (20 points)

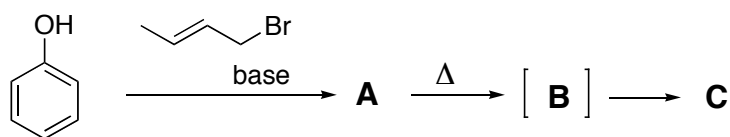
Draw Fisher projections of a D-aldopentose and an L-ketohexose.

Propose a synthesis of compound **II** from the carbohydrate derivative **I**. Suggest reagents and show intermediates (if any). Identify stereogenic centers in **II** and determine absolute stereochemistry.

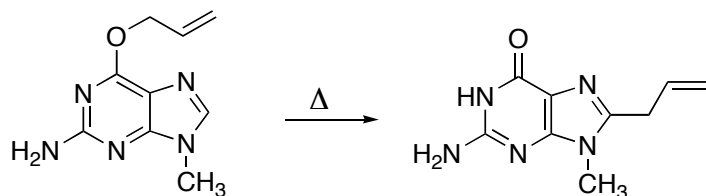


#### Exercise 4 (20 points)

Show structures of the intermediates **A** and **B** and the product **C**. The reaction from **A** to **B** is called [3,3]-rearrangement. Explain.

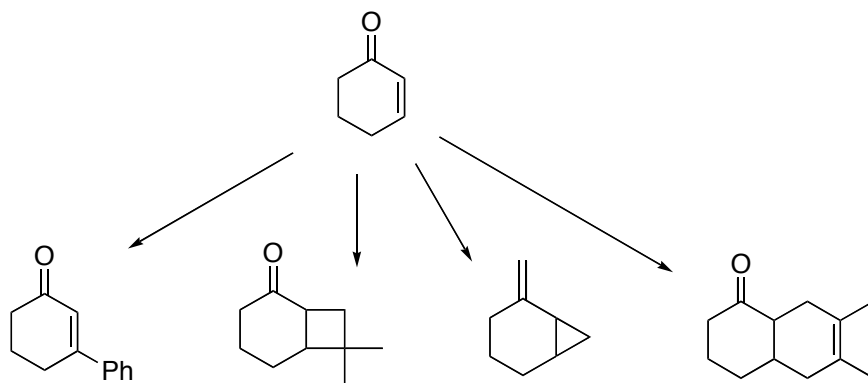


Suggest a mechanism for the following reaction.

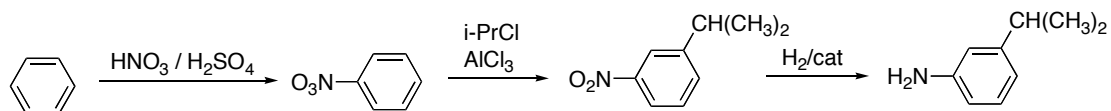
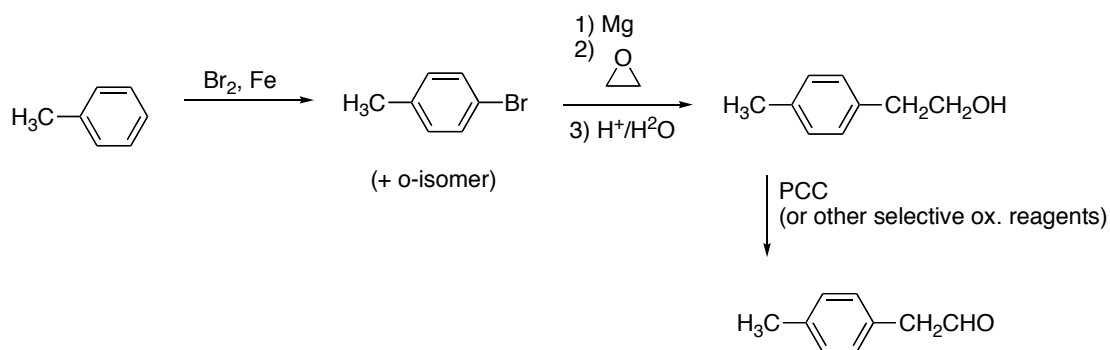


#### Exercise 5 (20 points)

Suggest reagents for the following transformations (one or two step reactions). When relevant, discuss the stereochemical outcome of the reactions.

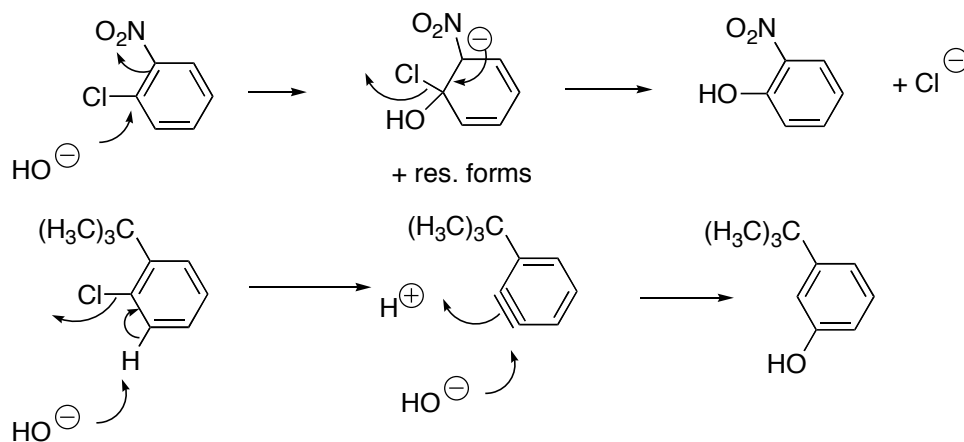


**Oppgave 1 (20 poeng)**

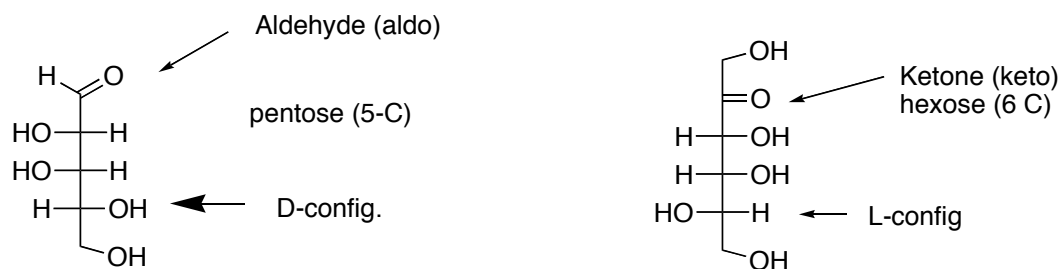


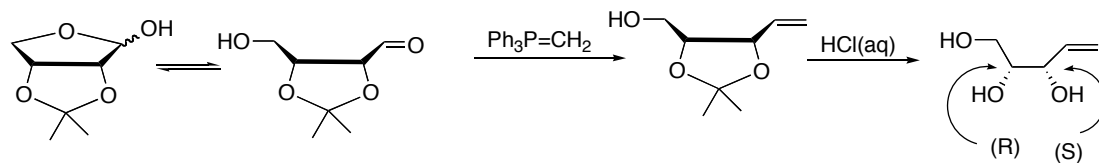
**Oppgave 2 (20 poeng)**

Show mechanisms for the following reactions.

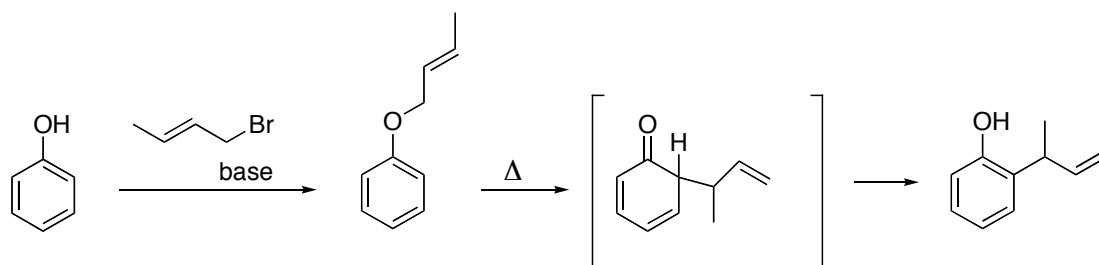


**Oppgave 3 (20 poeng)**

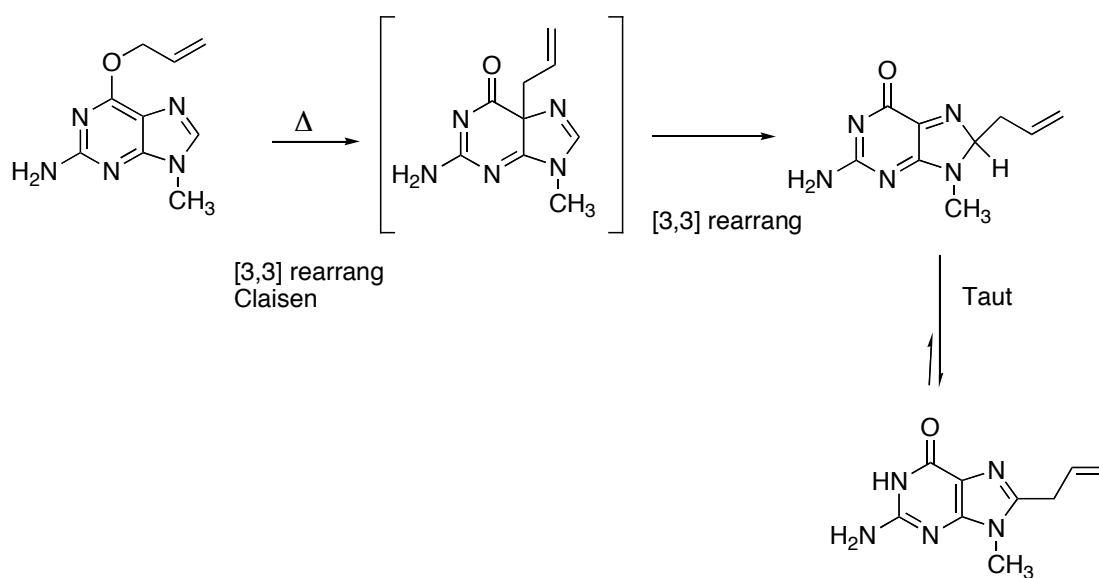
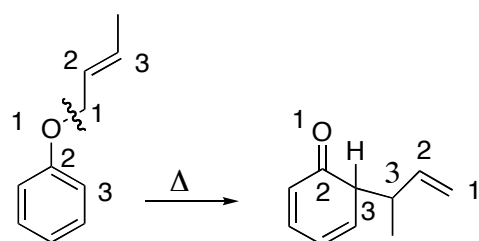




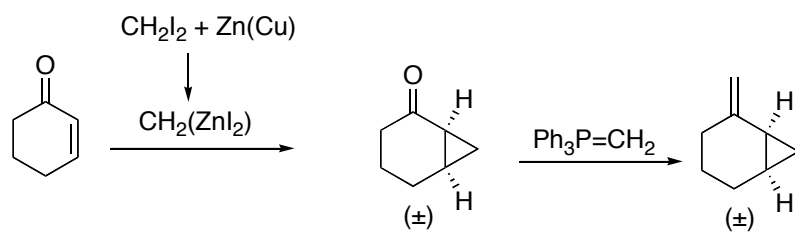
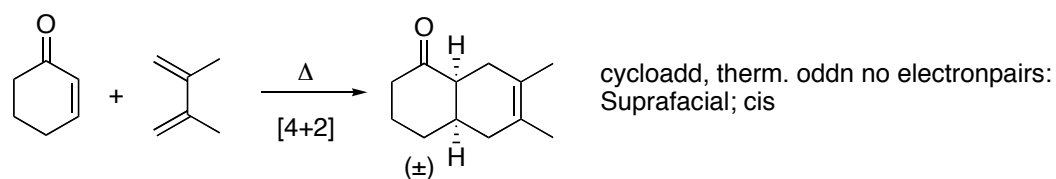
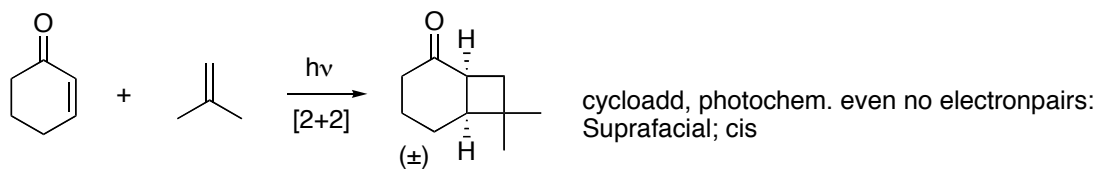
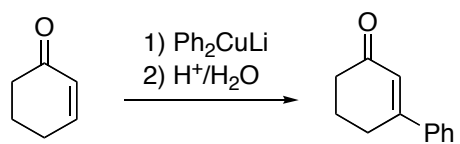
#### Oppgave 4



[3,3] Rearrangement: Bond formed between atom 3 and 3, rel to bond broken:



### Oppg 5



Concerted, cis add.