

**NATIONAL UNIVERSITY OF SINGAPORE**

**DEPARTMENT OF CHEMISTRY**

**ADVANCED PLACEMENT TEST  
(SAMPLE)**

**CM1121 ORGANIC CHEMISTRY 1**

**MMM-YYYY---- TIME ALLOWED: 2 HOURS**

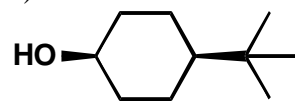
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**INSTRUCTIONS TO CANDIDATES**

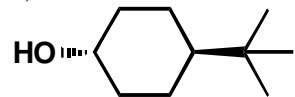
1. This paper contains **SIX (6)** questions and comprises **FOUR (4)** printed pages including this cover page.
2. This is a **CLOSED BOOK** test.
3. Only non-programmable and non-graphing calculators without remote communication function may be used.
4. No Helpsheet(s) will be provided.
5. Answer **ALL** questions.
6. Answer each question beginning on a **FRESH** page of the answer booklet.

1. Draw the most stable chair-form conformer of the following compounds:

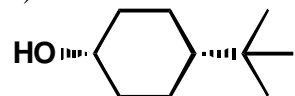
a)



b)

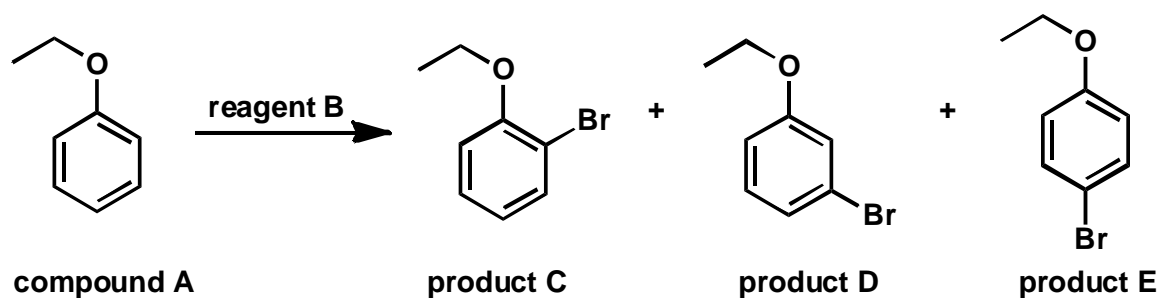


c)



(15 marks)

2. Treatment of **compound A** with **reagent B** yielded a mixture of **products C, D, and E**.



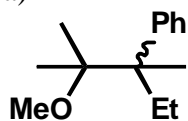
a) Identify **reagent B**.

b) Which product has the lowest yield? Explain your answer.

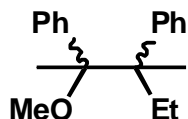
(15 marks)

3. Draw all possible stereoisomers for the following compounds and indicate the stereochemical relationship between the stereoisomers.

a)



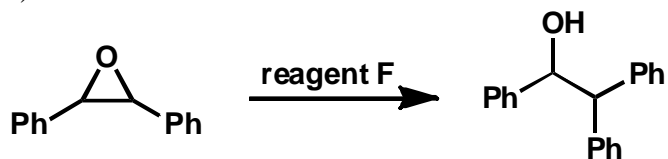
b)



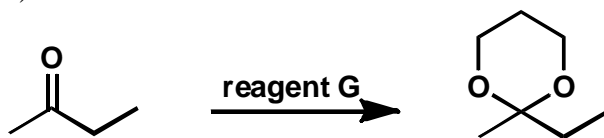
(30 marks)

4. Indicate reagents F-I.

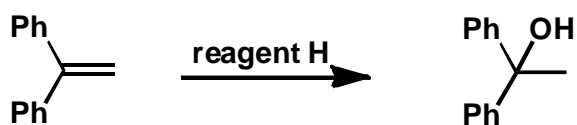
a)



b)



c)



d)



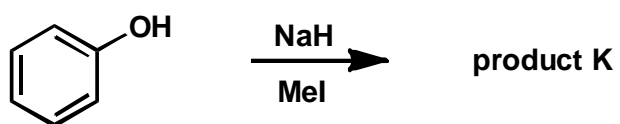
(20 marks)

5. Indicates **products J and K**.

a)

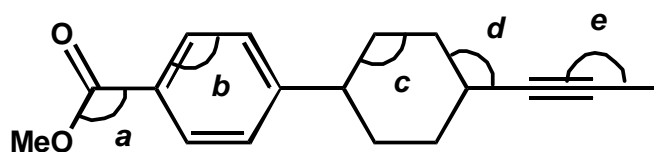


b)



(10 marks)

6. Indicate the following bond angles **a-e**:



(10 marks)

----- THE END -----