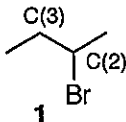


[有機化学基礎]

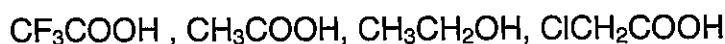
以下の問 (1) ~ (4) に答えよ.

- (1) (a) 2-ブロモブタン(1)をC(2)-C(3)結合から見た際の、全てのねじれ形配座のNewman投影式を描け.

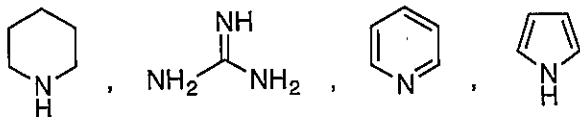


- (b) 化合物1の二つの光学異性体を描け. それぞれの絶対立体配置をRS表示を用いて示せ.
- (c) (R)-1とシアン化ナトリウムとの反応の生成物の構造をその立体化学を明示しつつ描け. また, この反応の遷移状態の構造および反応機構を電子の移動を表す巻矢印表記法を用いて示せ.

- (2) (d) 以下の化合物を, 酸性度の低いものから高いものへ順に並べよ.



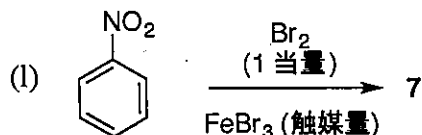
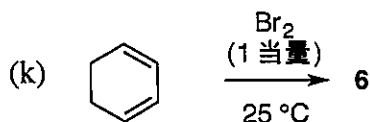
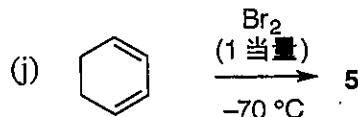
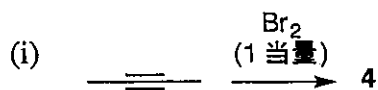
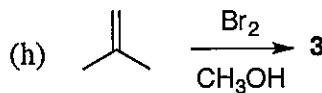
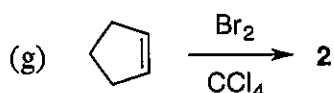
- (e) 以下の化合物を, 塩基性度の低いものから高いものへ順に並べよ.



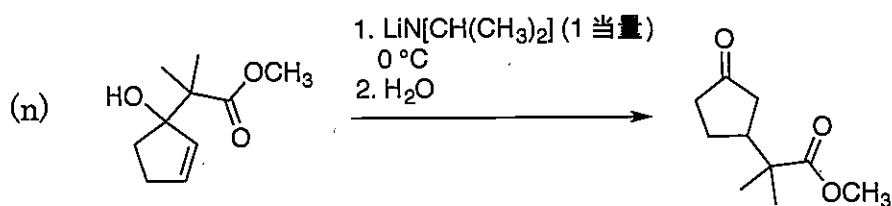
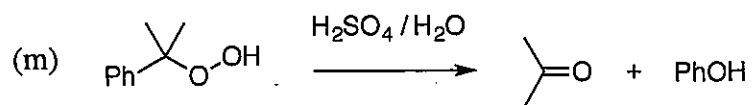
- (f) 以下の化合物を, 沸点の低いものから高いものへ順に並べよ.



- (3) 以下に示す臭素化反応(g)~(l)について, 主生成物 2~7 の構造を, 立体化学を明確にして描け.

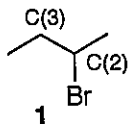


(4) 以下に示す反応(m), (n)について, 反応機構を電子の移動を表す巻矢印表記法を用いて示せ.



Answer problems (1) through (4).

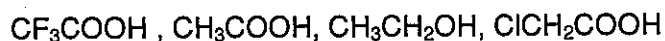
- (1) (a) Look down the C(2)-C(3) bond of **1**, and draw the Newman projections for all the staggered conformations of 2-bromobutane (**1**).



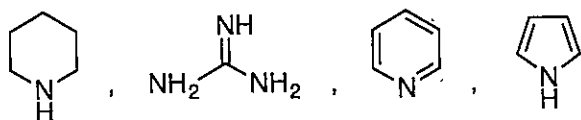
(b) Draw the two enantiomers of **1**, and name them according to the *RS* convention.

(c) Show the main product of the reaction of (*R*)-**1** with sodium cyanide. Show the reaction mechanism using the curved arrow formalism, and show the structure of the transition state. Also indicate the stereochemistry of the product.

- (2) (d) List the following compounds in the increasing order of acidity:



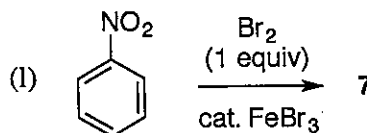
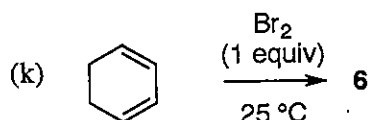
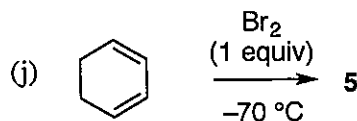
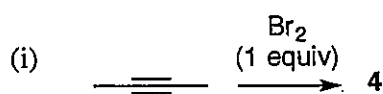
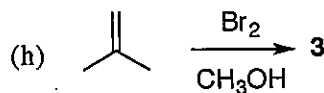
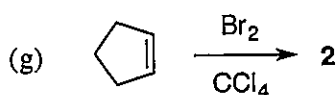
(e) List the following compounds in the increasing order of basicity:



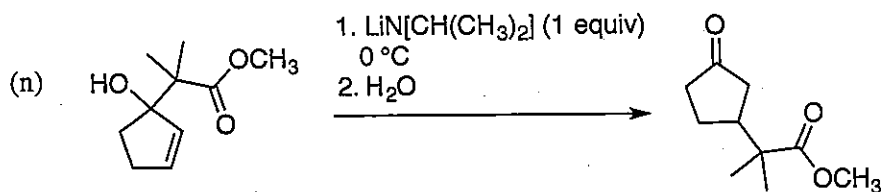
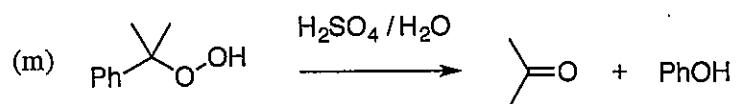
(f) List the following compounds in the increasing order of the boiling point:



- (3) Predict the main products **2–7** for the following bromination reactions (g)–(l). If applicable, indicate the stereochemistry of each product,



(4) Show the reaction mechanism using the curved arrow formalism for the reactions (m) and (n).



## 問題訂正

有機化学基礎

問(4)の(n)の矢印上

【誤】  $\text{LiN}[\text{CH}(\text{CH}_3)_2]$

【正】  $\text{LiN}[\text{CH}(\text{CH}_3)_2]_2$

Organic Chemistry: Basic

Problem (4)-(n), on top of the arrow

【Incorrect】  $\text{LiN}[\text{CH}(\text{CH}_3)_2]$

【Correct】  $\text{LiN}[\text{CH}(\text{CH}_3)_2]_2$