

# 大同大學104 學年度(寒)轉學入學考試試題

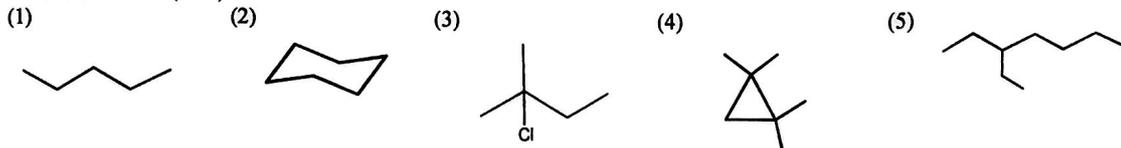
考試科目:有機化學

系別:化學工程學系

第1/2頁

註:本次考試 不可以參考自己的書籍及筆記; 不可以使用字典; 不可以使用計算器

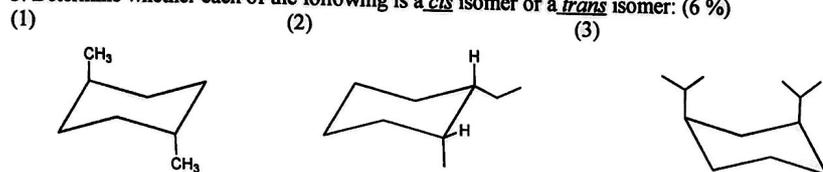
## 1. Nomenclature (15%)



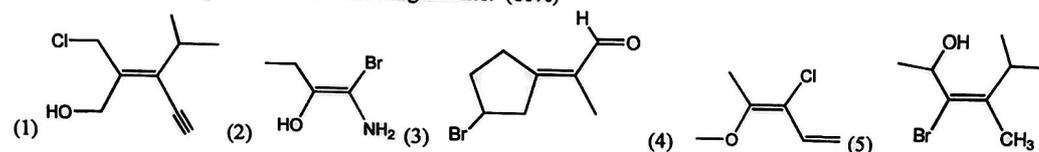
## 2. Draw the following molecular structures. (15%)

- (1) *tert*-butyl bromide (2) 2,3,5-trimethyloctane (3) octane (4) 3-ethylhexane (5) (*E*)-6-fluoro-4-ethyl-3-methyloct-3-ene

## 3. Determine whether each of the following is a *cis* isomer or a *trans* isomer: (6 %)



## 4. Assign E or Z configuration to the following alkenes. (10%)

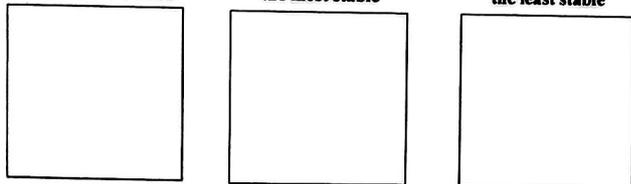


## 5. For rotation about the C-3 —C-4 bond of 2,2,5,5-tetramethylhexane, please draw a Newman projection of its the most stable and the least stable conformers. (3+8%)

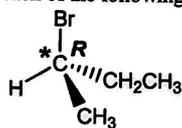
Molecular structure

the most stable

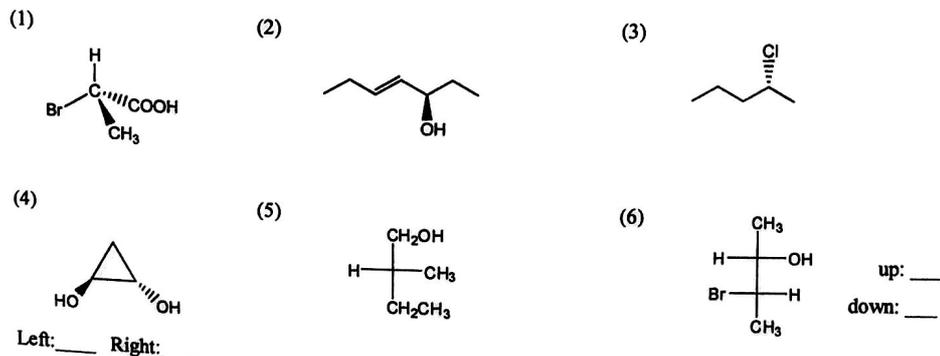
the least stable



## 6. Indicate whether each of the following structures has the *R* or the *S* configuration: (16%)



For example :



◀背面尚有試題▶

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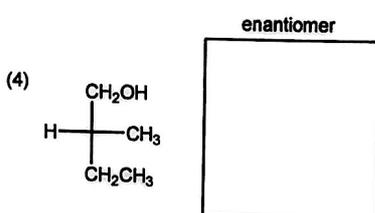
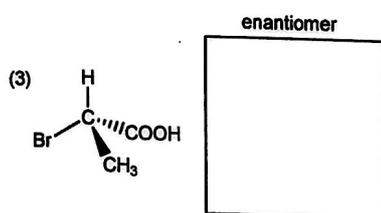
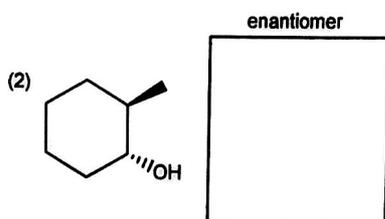
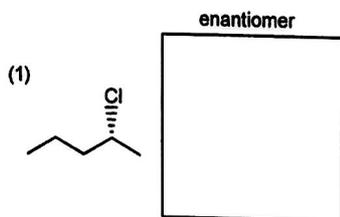
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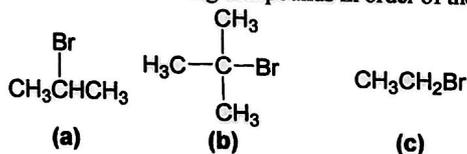
第2/2頁

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7. Draw the enantiomer of each of the following compounds: (12%)

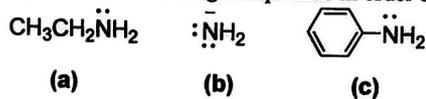


8. (1) Rank the following compounds in order of their expected reactivity toward  $S_N1$  and  $S_N2$  reaction: (6%)



Ans:  $S_N1$ : \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_  
 Ans:  $S_N2$ : \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_

(2) Rank the following compounds in order of decreasing base strength. (6%)



Ans: \_\_\_\_\_ > \_\_\_\_\_ > \_\_\_\_\_

(3) Which of the following  $S_N2$  reactions is the slowest? (\_\_\_\_) (3%)

- A)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} + \text{HO}^- \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{Br}^-$   
 B)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl} + \text{HO}^- \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{Cl}^-$   
 C)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{I} + \text{HO}^- \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{I}^-$   
 D)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{F} + \text{HO}^- \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{F}^-$