

大同大學 105 學年度(暑)轉學入學考試試題

考試科目:有機化學

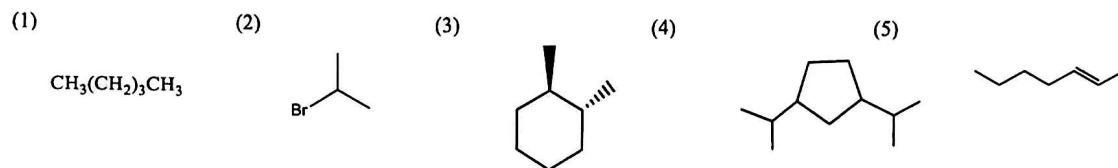
系別:化學工程學系/生物工程學系 第1/2頁

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。

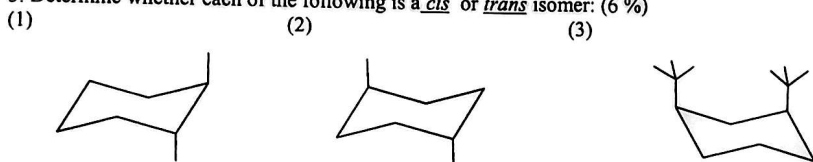
1. Draw the following molecular structures. (10%)

- (1) isopropyl alcohol (2) 2,3,4-trimethyloctane (3) toluene (4) 2-methylhexane
(5) benzoic acid

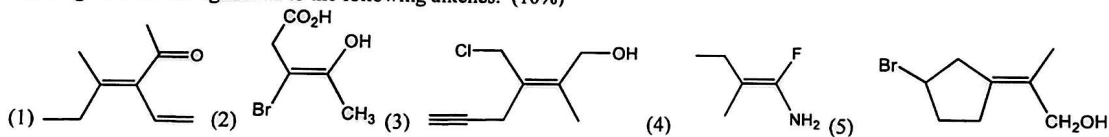
2. Nomenclature (10%)



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

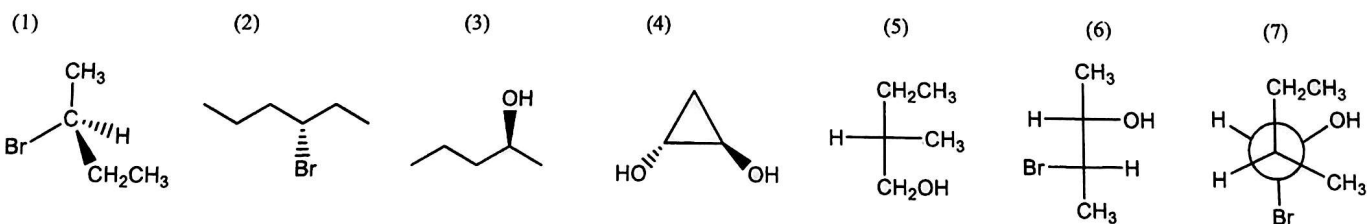
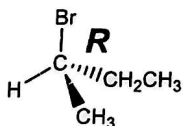


4. Assign *E* or *Z* configuration to the following alkenes. (10%)



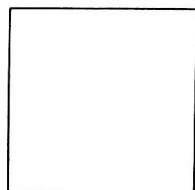
5. Indicate whether each of the following structures has the *R* or the *S* configuration: (10%)

For example :

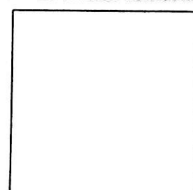


6. Please draw the Newman projection of its the most stable and the least stable conformers for rotation about the C-3 —C-4 bond of 2,2,5,5-tetramethylhexane. (8%)

the most stable conformer



the least stable conformer



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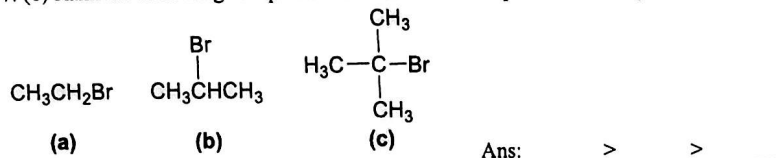
考試科目：有機化學

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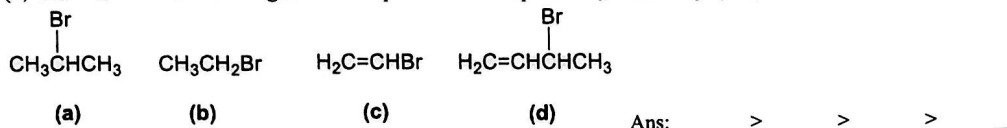
第2/2頁

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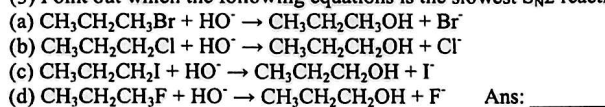
7. (1) Rank the following compounds in order of their expected reactivity toward E2 reaction: (3%)



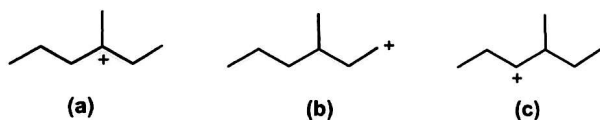
(2) Order each of the following sets of compounds with respect to $\text{S}_{\text{N}}2$ reactivity: (4%)



(3) Point out which of the following equations is the slowest $\text{S}_{\text{N}}2$ reaction. (4%)

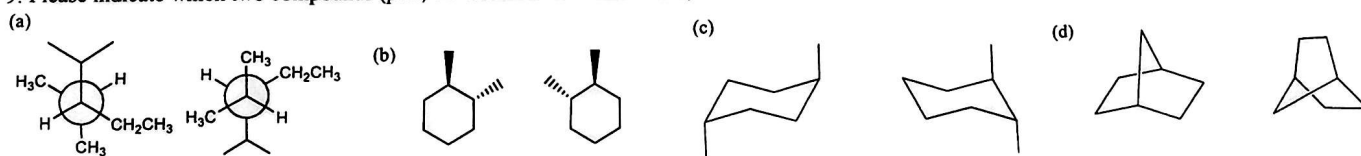


8. Rank the following carbocations in order of decreasing stability. (3%)

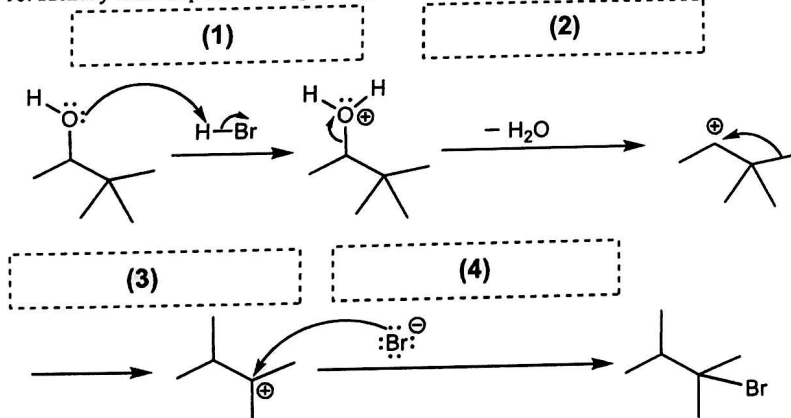


Ans: _____ > _____ > _____

9. Please indicate which two compounds (pair) are **identical** or **enantiomers**, **diastereomers**, or **constitutional isomers**. (8%)



10. Identify each step the arrow-pushing that is being utilized (**nucleophilic attack**, **loss of a leaving group**, **proton transfer**, **rearrangement**). (8%)



11. Please finish the following reactions: (16%)

