

大同大學 103 學年度(暑)轉學入學考試試題

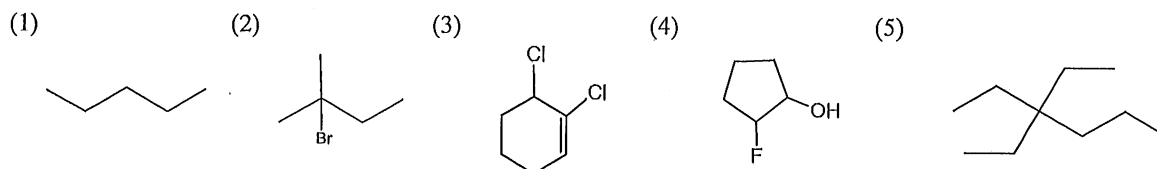
考試科目:有機化學

所別: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。

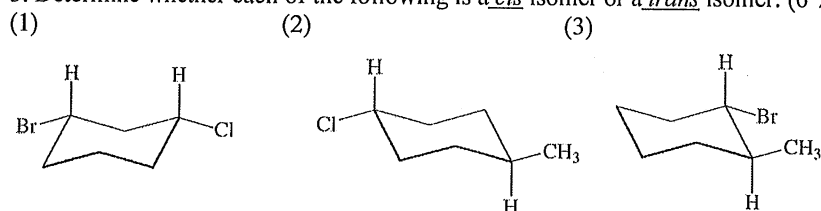
1. Nomenclature (10%)



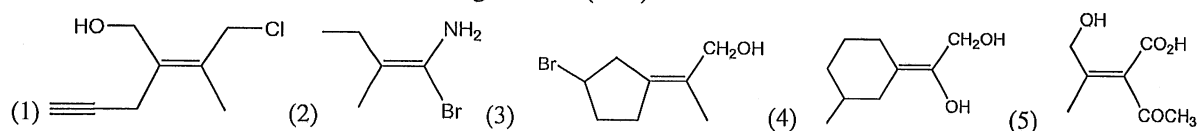
2. Draw the following molecular structures. (10%)

- (1) 2-butanol (2) 2,2,5-trimethylhexane (3) toluene (4) 6-(1,2-dimethylpropyl)-4-propyldecane
 (5) (Z)-6-chloro-4-ethyl-4-propyldecane

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

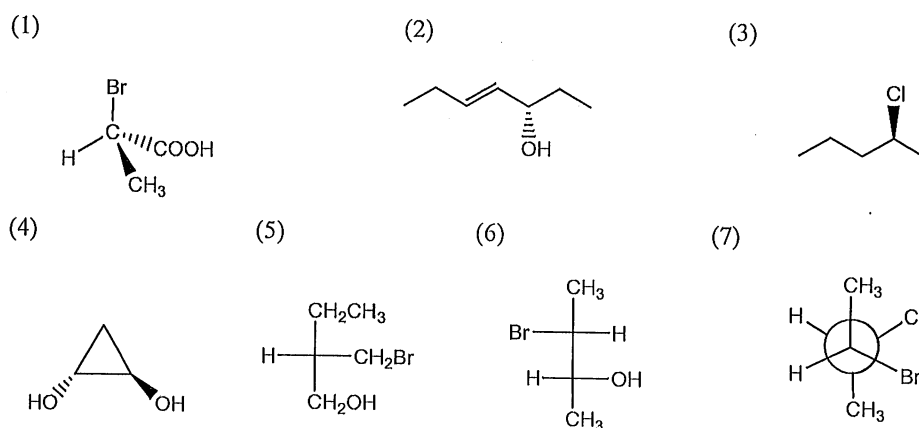
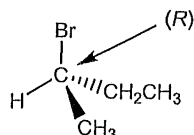


4. Assign E or Z configuration to the following alkenes. (10%)



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

For example :



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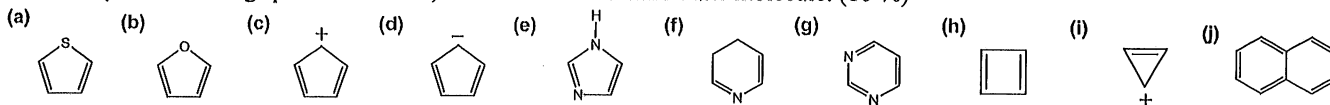
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考試科目：有機化學 <接前頁> 所別：化學工程學系

第 2/2 頁

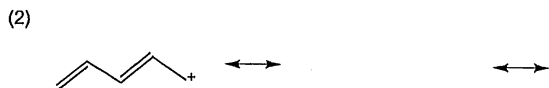
註：本次考試 不可以 參考自己的書籍及筆記； 不可以 使用字典； 不可以 使用計算器。

5. Classify the following species aromatic, nonaromatic or antiaromatic molecule. (10 %)

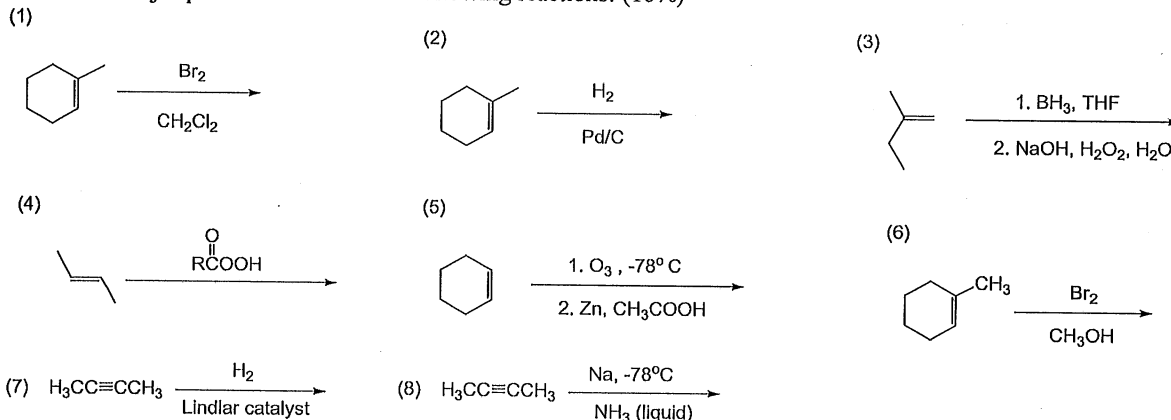


Aromatic: _____
 Nonaromatic: _____
 Antiaromatic: _____

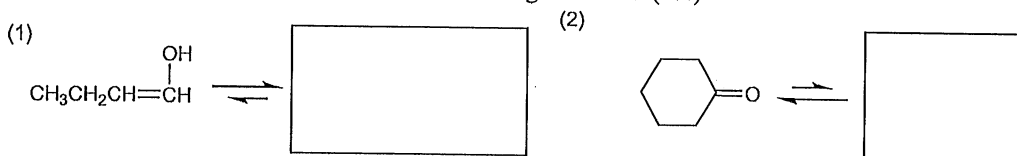
6. Draw resonance contributors for each of the following structures. (14%)



7. Give the major product of each of the following reactions: (16%)



8. Please draw enol or keto tautomer of the following structure. (4%)



9. Please translation and explain the following essay. (10%)

The Lucas Test

Before spectroscopy became available for structural analysis, chemists had to identify compounds by tests that gave visible results. The Lucas test is one such test. It determines whether an alcohol is primary, secondary, or tertiary by taking advantage of the relative rates at which the three classes of alcohols react with HCl/ZnCl_2 .

To carry out the test, the alcohol is added to a mixture of HCl and ZnCl_2 (known as Lucas reagent). Low-molecular-weight alcohols are soluble in Lucas reagent, but the alkyl halide products are not, so they cause the solution to turn cloudy. If the alcohol is tertiary, the solution turns cloudy immediately. If the alcohol is secondary, the solution turns cloudy in approximately one to five minutes. If the alcohol is primary, the solution turns cloudy only if it is heated. Because the test relies on the complete solubility of the alcohol in Lucas reagent, it is limited to alcohols with fewer than six carbons.