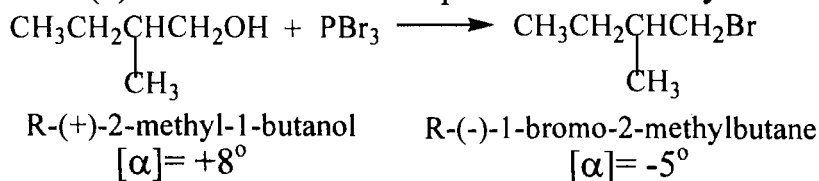


系所組別： 化學工程學系乙組

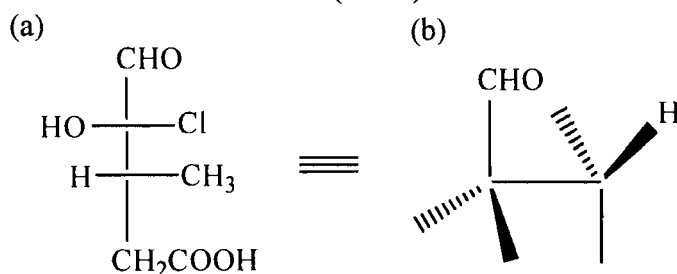
考試科目： 有機化學

考試日期： 0225，節次： 1

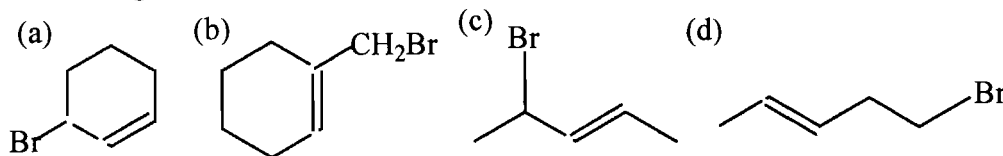
1. Following is a reaction of pure optical compounds. (a) If we start from -4° methylbutanol, calculate the specific rotation ($[\alpha]$) of the product. (b) What is e.e.% of the product? (c) How much R and S products will be synthesized? (10%)



2. (a) Mark star and predict R/S configuration for each of chiral centers. (b) Complete the molecular structure. (10%)

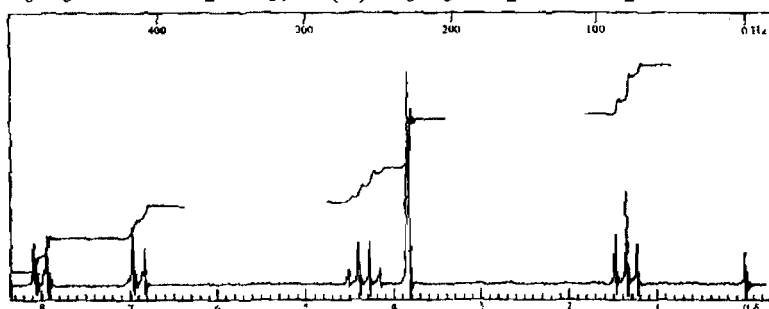
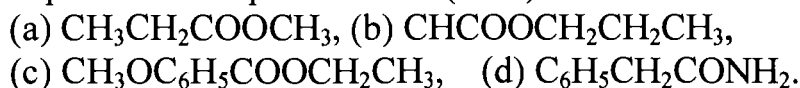


3. Draw the resonance structure of the allylic cations formed by ionization of the following halides. (10%)



4. Compare the acidity of alcohols and phenol. Which one is a stronger acid, why? Write your reasons in detail. (10%)

5. Select suitable molecules consistent with the NMR spectrum in Figure 1 and assign the peaks for the protons. (10%)



6. How to use Mass Spectrometry to identify samples of C_3H_8 , $\text{C}_2\text{H}_4\text{O}$, CO_2 , and CN_2H_4 ? Describe in detail. (10%)

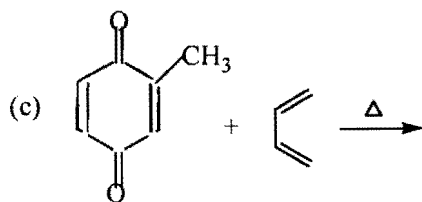
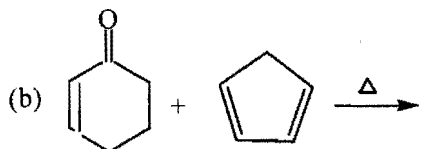
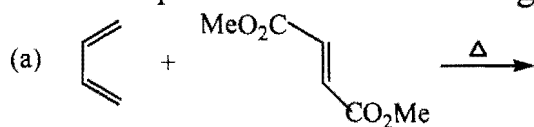
(背面仍有題目,請繼續作答)

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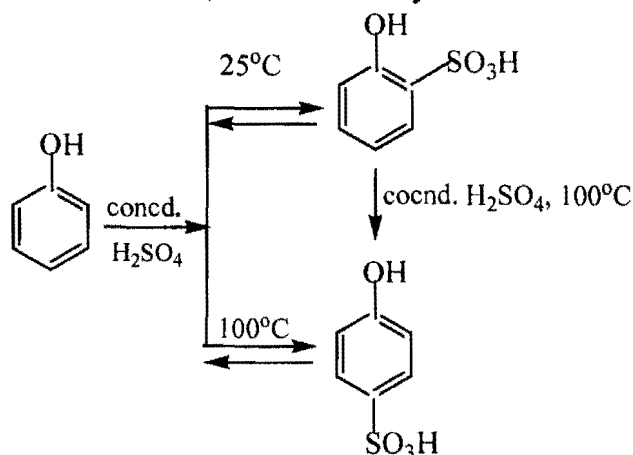
考試科目： 有機化學

考試日期： 0225，節次： 1

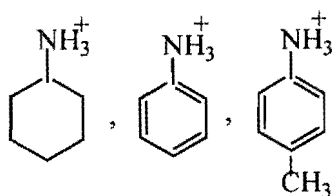
7. Predict the products of the following reactions. (10%)



8. Draw a potential energy curve of the following reactions to describe the relative stability of the products and the occurrence of the reactions. Which reaction is kinetic control, and thermodynamic control? (10%)



9. Compare the basicity of the following compounds and describe your reasons in detail. (10%)



10. Compare the following reactions and describe the difference of the selectivity between the reactions in detail. (10%)

