

國立臺灣科技大學 111 學年度碩士班招生試題

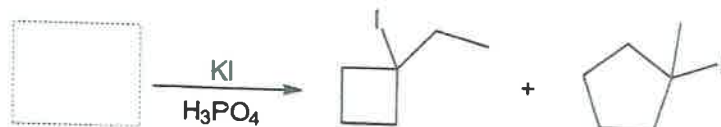
系所組別：材料科學與工程系碩士班甲組

科目：有機化學

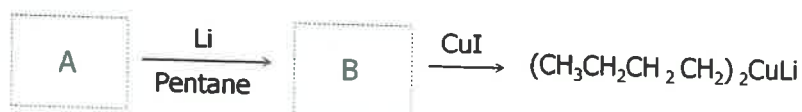
(總分為 100 分；所有試題務必於答案卷內頁依序作答，否則不予計分)

1. Please predict the reactant(s), intermediate(s) or product(s) of the following reactions. (15%)

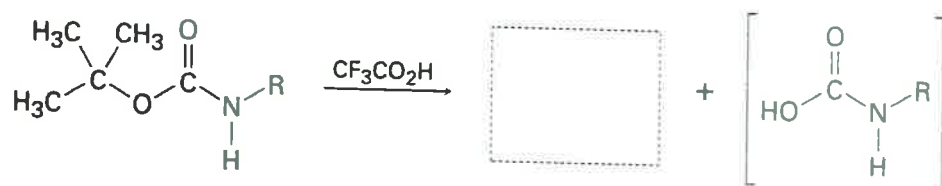
(1) (3%)



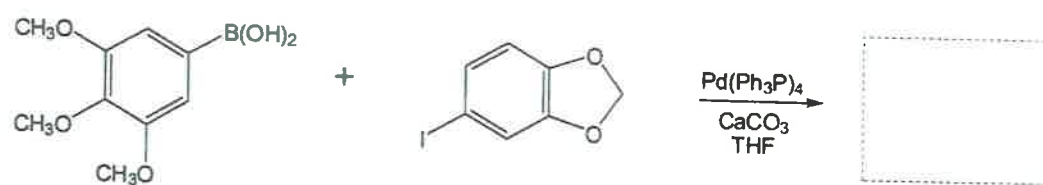
(2) (6%, each 3%)



(3) (3%)

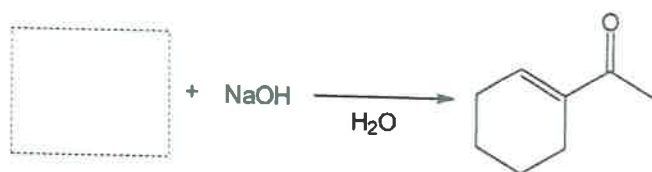


(4) (3%)

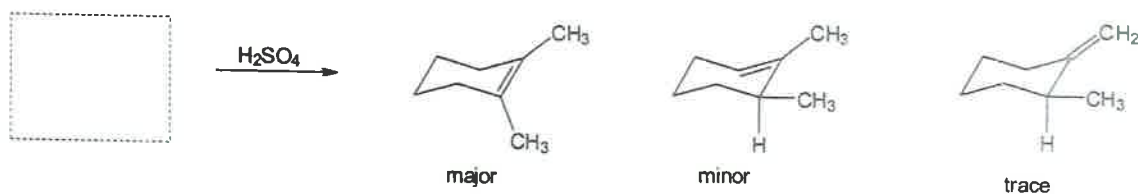


2. Predict the reactant of each reaction below and indicate if the mechanism is likely to be SN1, SN2, E1, E2, or E1cB. (12%)

(1) (4%)



(2) (4%)



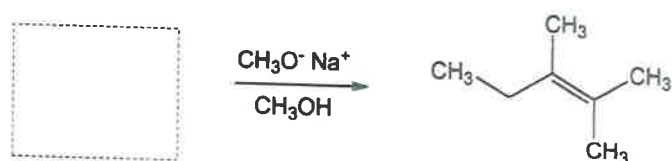
國立臺灣科技大學 111 學年度碩士班招生試題

系所組別：材料科學與工程系碩士班甲組

科目：有機化學

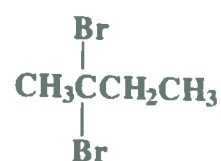
(總分為 100 分；所有試題務必於答案卷內頁依序作答，否則不予計分)

(3) (4%)



3. How many singlets, doublets, triplets, quartets, and multiplets are expected in the $^1\text{H-NMR}$ spectrum of following compounds? (8%)

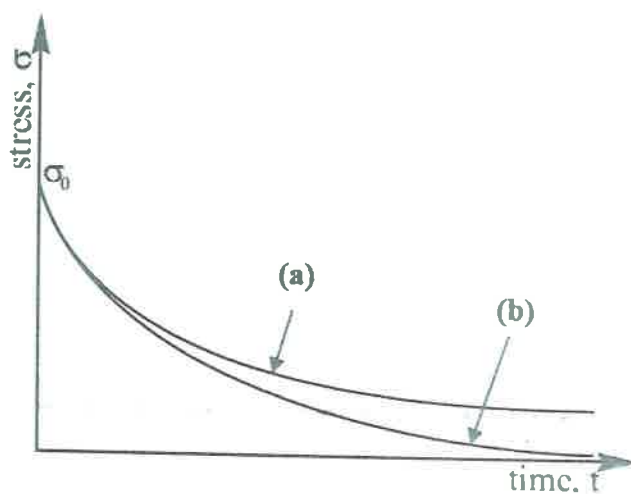
(1) (4%)



(2) 3-chloro-3-methylpentane (4%)

4. Stress relaxation depicts how viscoelastic materials, especially polymeric materials. (15%) (1) Please describe the stress relaxation using time, stress and strain. (5%)

(2) The following figure is stress-time curve for thermoplastic and thermoset polymer. Please indicate which curve is for thermoplastic polymer, and which for thermoset polymer (10%, each 5%).



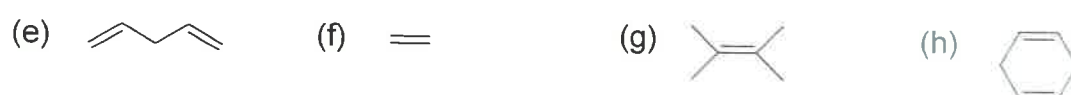
國立臺灣科技大學 111 學年度碩士班招生試題

系所組別：材料科學與工程系碩士班甲組

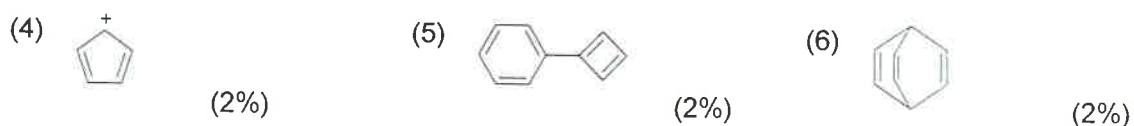
科目：有機化學

(總分為 100 分；所有試題務必於答案卷內頁依序作答，否則不予計分)

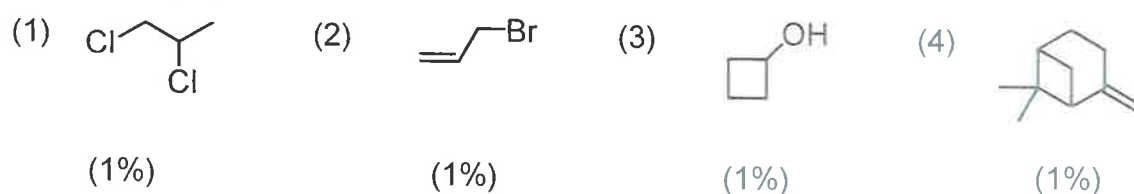
5. Which combinations give the highest reactivity in the Diels-Alder reaction? (4%)



6. Please classify the following compounds to be aromatic, antiaromatic or nonaromatic. (12%)



7. How many types of nonequivalent protons are present in each of the following molecules? (4%)



8. Predict the intermediates or major products of the following reactions. (30%)



國立臺灣科技大學 111 學年度碩士班招生試題

系所組別：材料科學與工程系碩士班甲組

科目：有機化學

(總分為 100 分；所有試題務必於答案卷內頁依序作答，否則不予計分)

