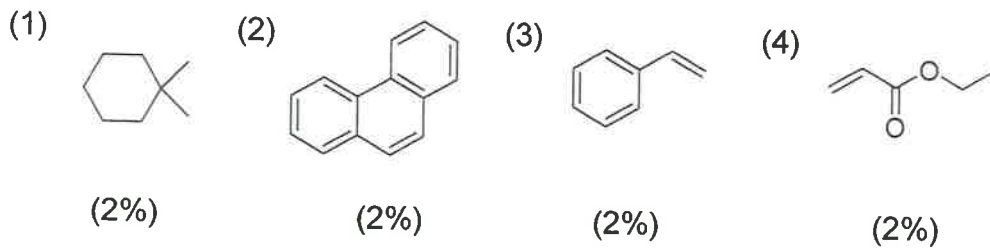


國立臺灣科技大學 110 學年度碩士班招生試題

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)

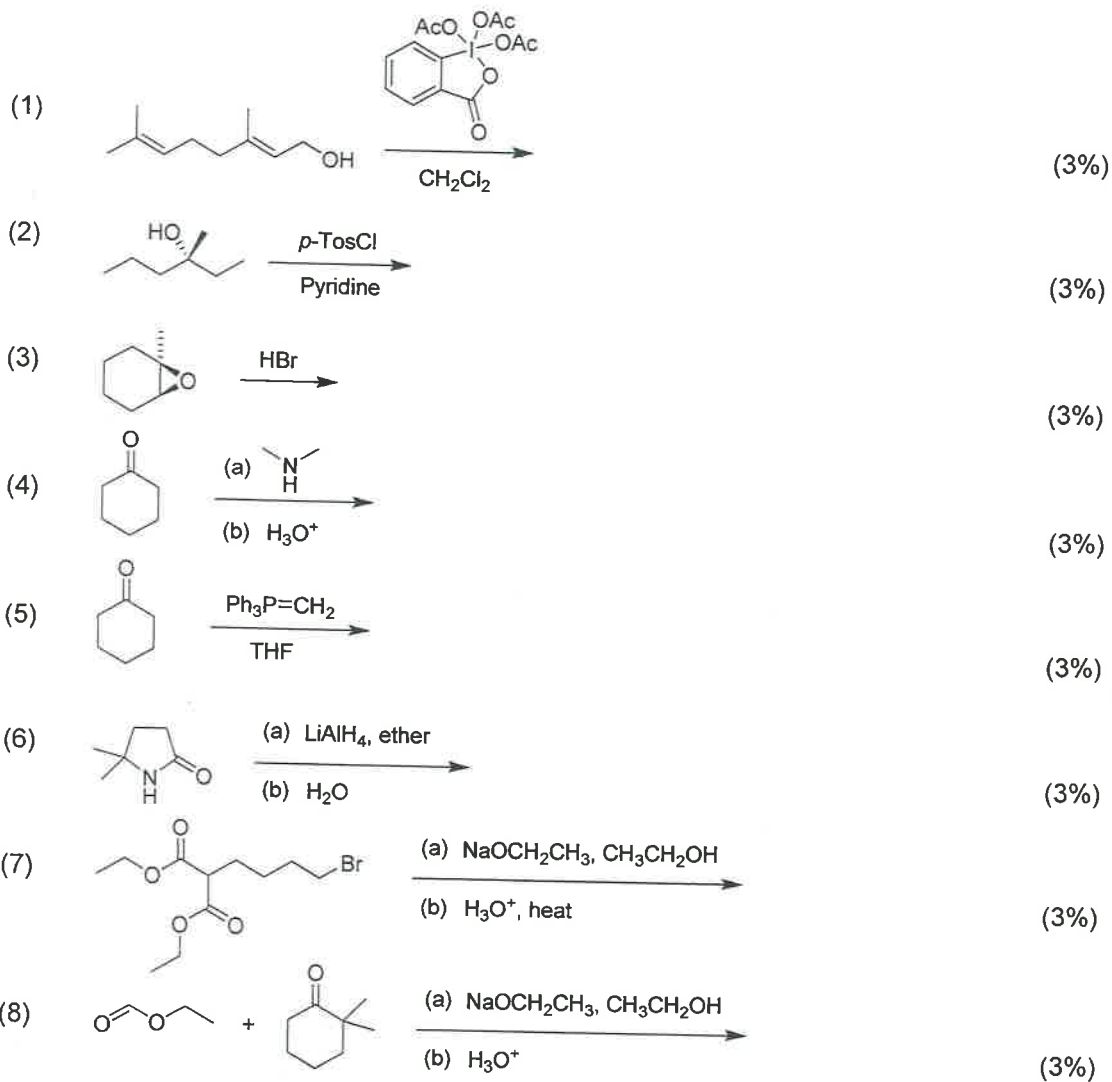
1. How many types of nonequivalent protons are present in each of the following molecules? (8%)



2. How might you synthesize the following substances from benzene? (9%)

- (1) 2-chloro-6-nitrotoluene (3%)
 (2) *m*-chloroethylbenzene (3%)
 (3) *m*-methylphenol (3%)

3. Predict the major products of the following reactions. (24%)



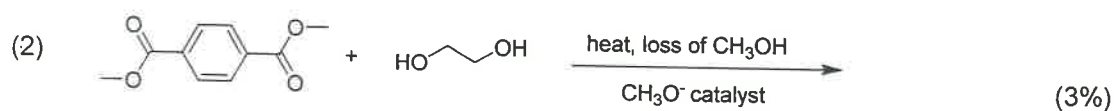
國立臺灣科技大學 110 學年度碩士班招生試題

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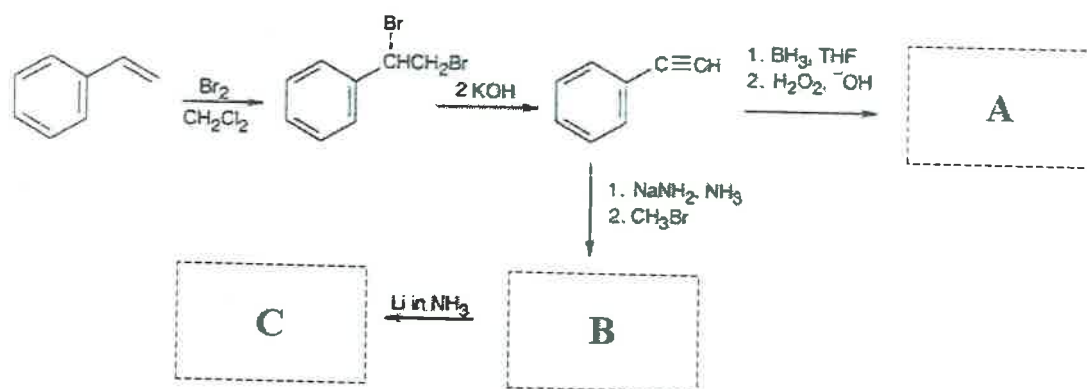
(總分為 100 分)

4. Draw the chemical structures of the following polymers. (9%)

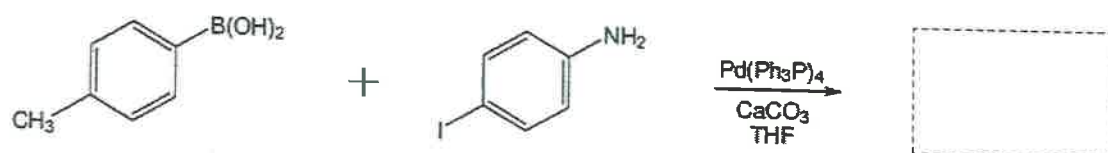


5. (Total 21%) Please predict the reactants, intermediates or products of the following reactions.

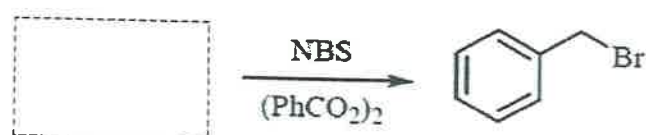
(1) (9%, each 3%)



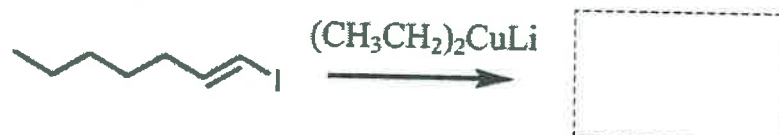
(2)(3%)



(3) (3%)



(4) (3%)



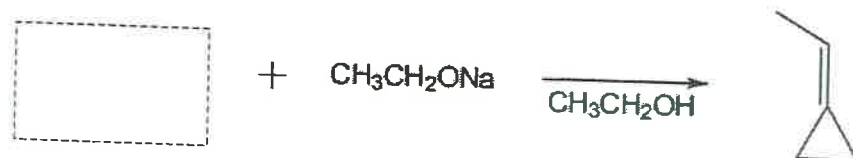
國立臺灣科技大學 110 學年度碩士班招生試題

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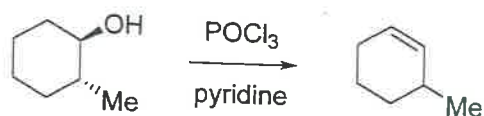
(總分為 100 分)

(5) (3%)



6. (Total 8%) Tell whether each of the following reactions is likely to be SN1, SN2, E1, or E2:

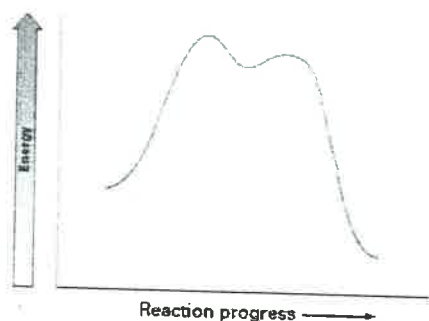
(1) (2%)



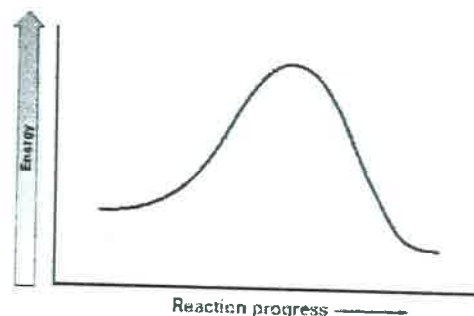
(2) (2%)



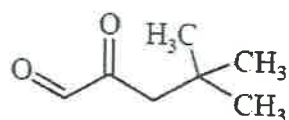
(3) (2%)



(4) (2%)

7. (Total 6%) How many singlets are expected in the $^1\text{H-NMR}$ spectrum of following compounds?

(1) (3%)



(2) (3%)

8. (Total 15%) (1) Please rank the following from highest to lowest: viscosity average molecular weight (M_v), number average molecular weight (M_n), weight average molecular weight (M_w) and Z weight average molecular weight (M_z) (8%) (2) Please describe and explain the definition of polydispersity index of a polymer (7%)