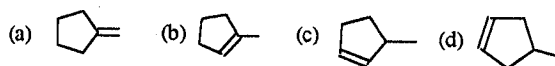
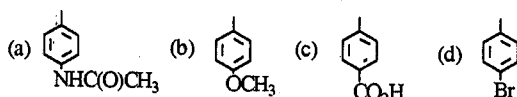


1. (4%) What is a reasonable explanation for the following observation?  
Acetylene is a stronger acid than ethane.  
I. electronegativity II. resonance III. hybridization  
(a) I, II (b) I, III (c) II (d) I
2. (4%) Which of the following reagents will react with an alkene in an anti addition?  
I.  $\text{Cl}_2$  II.  $\text{Br}_2/\text{H}_2\text{O}$  III.  $\text{BH}_3$  IV.  $\text{KMnO}_4$   
(a) I, II (b) III, IV (c) II, III (d) I, IV
3. (4%) What is the intermediate for the reaction of propene with hydrogen bromide and hydrogen peroxide?

4. (4%) Which of the following compounds give two isomers when reacted with chlorine in carbon tetrachloride?

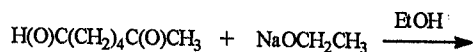


5. (4%) What is the best condition for converting 3-hexyne to cis-3-hexene?  
(a)  $\text{Ni} + \text{H}_2$  (b)  $\text{Pd}/\text{CaCO}_3 + \text{H}_2$  (c)  $\text{Na} / \text{NH}_3$  (d)  $\text{NaNH}_2 + \text{NH}_3$  (l)
6. (4%) Which compound reacts most readily in the nitration reaction?

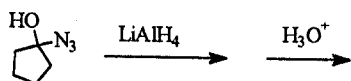


7. (4%) What is the major product from the Baeyer-Villiger oxidation of cyclohexanone?

8. (4%) What is the major product from the following reaction?



9. (4%) Carboxylic acids and amides have in general higher boiling points than esters and anhydrides because of which property?  
(a) dipolar association (b) resonance stabilization (c) conjugated functional groups (d) hydrogen bonding
10. (4%) What is the major product from the following reaction?



(背面仍有題目,請繼續作答)

11. (40%) Give one example and detailed mechanism for each of the following name reactions.

(a) Haloform reaction

(b) Aldol condensation reaction

(c) Friedel-Crafts alkylation reaction

(d) Cope elimination reaction

(e) Claisen rearrangement

12. (20%) Provide reasonable synthetic sequences for the preparation of the following compounds from the indicated starting materials and any other necessary reagents.

