

系別：化學系三年級

科目：有機化學

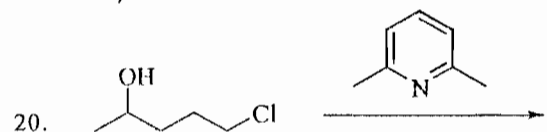
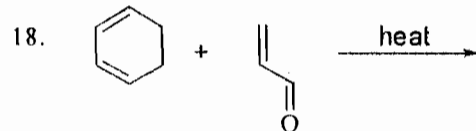
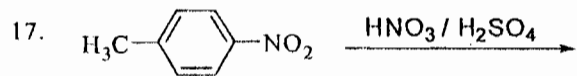
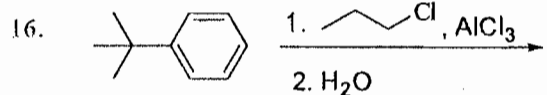
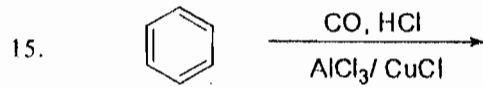
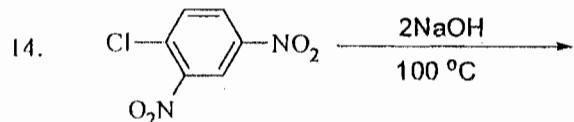
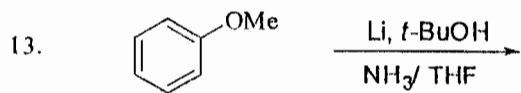
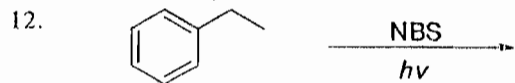
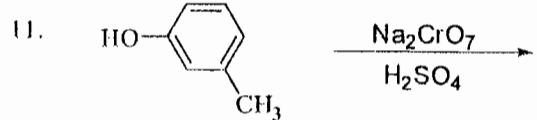
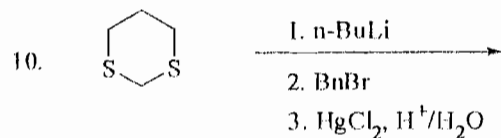
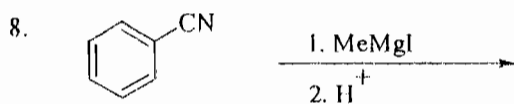
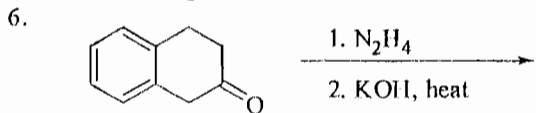
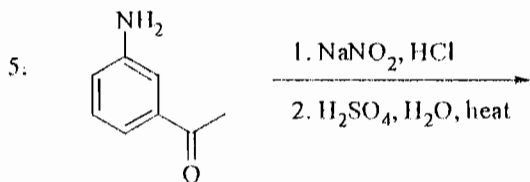
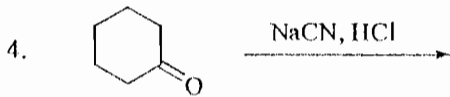
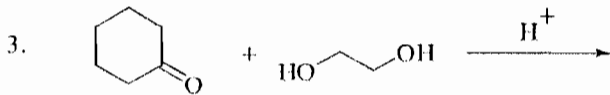
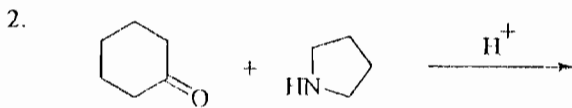
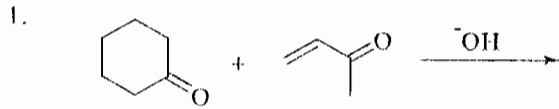
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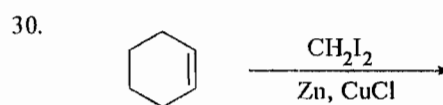
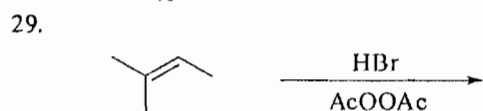
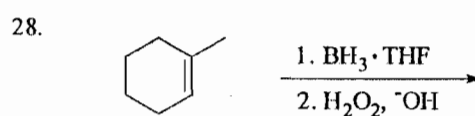
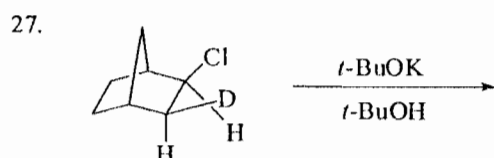
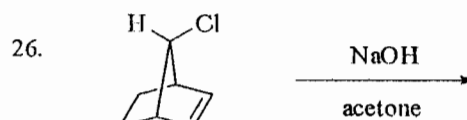
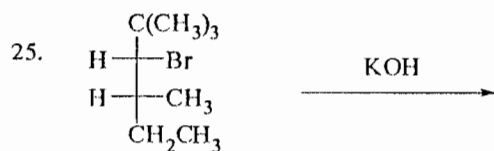
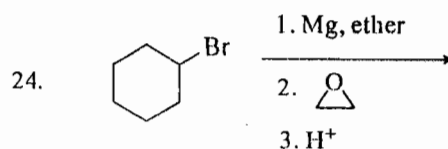
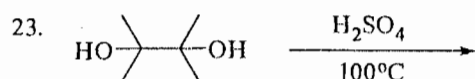
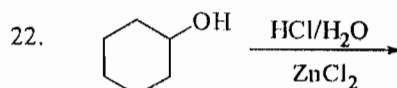
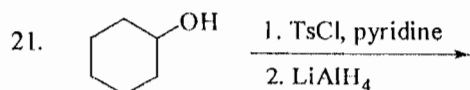
Part I. Predict the major product each of the following reaction. Indicate the stereochemistry if necessary. (60pt)



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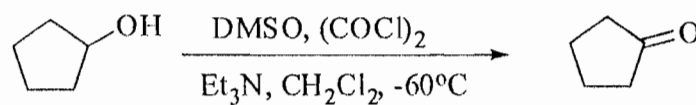
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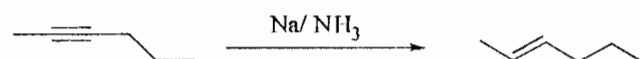


Part II. Propose the mechanism of the following reactions. (20 pt)

(a)



(b)



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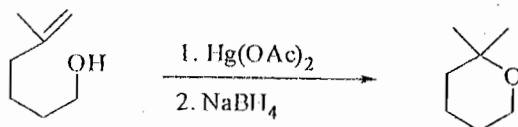
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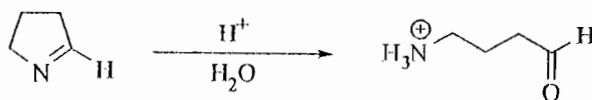
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(c)

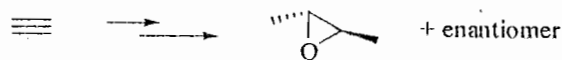


(d)

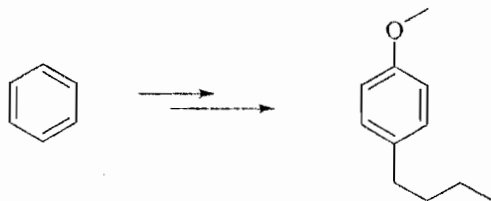


Part III. Propose the synthetic route for each of the following reaction from the provided starting material. (10 pt)

(a)

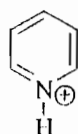


(b)

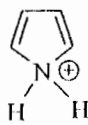


Part IV. Please select the most appropriate answer of the following questions. (10 pt)

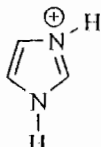
(a) Rank the following in order of increasing pK_a (from lowest to highest pK_a)



1



2



3

- A) 1 < 2 < 3
- B) 3 < 2 < 1
- C) 2 < 1 < 3
- D) 3 < 1 < 2
- E) 2 < 3 < 1

◀ 注意背面尚有試題 ▶

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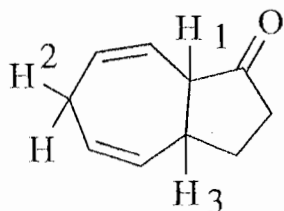
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計算機

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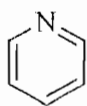
(b) Which sequence correctly ranks the following protons in order of increasing acidity?



- A) $1 < 2 < 3$
 B) $2 < 3 < 1$
 C) $3 < 1 < 2$
 D) $3 < 2 < 1$
 E) $2 < 1 < 3$

(c) Which of the following structures, if flat, would be classified as antiaromatic?

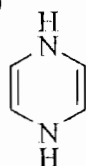
(A)



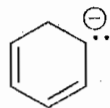
(B)



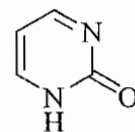
(C)



(D)



(E)



(d) In biological systems, sulfonium salts such as SAM serve what function?

- A) esterifying agents
 B) epoxidizing agents
 C) nucleophilic agents
 D) crown ether agents
 E) alkylating agents

(d) Which of the following is the best way to synthesize t-butyl ethyl ether?

- A) treatment of t-butyl bromide with sodium ethoxide
 B) treatment of ethyl bromide with sodium t-butoxide
 C) heating a mixture of ethanol and t-butanol in sulfuric acid
 D) treating t-butyl bromide with $\text{Hg}(\text{OAc})_2$
 E) treating t-butanol with $\text{Hg}(\text{OAc})_2$