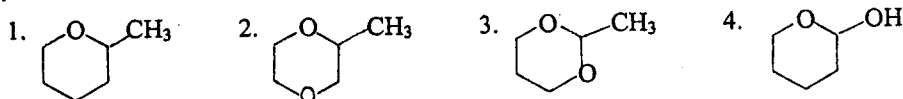


系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
藥 二	有機化學	李 淑	90年 1 月 17 日 第 節		

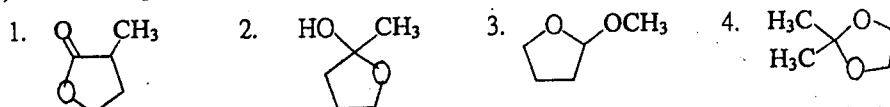
※①請注意本試題共 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。

I. Multiple choice: 20 %

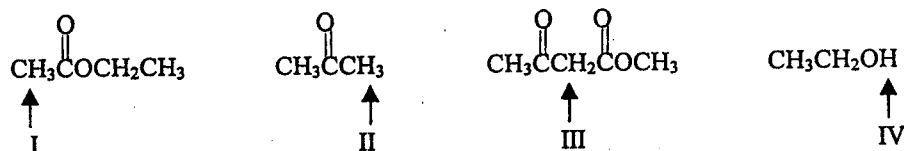
() Which of the following compound is acetal?



() Which compound reacts with aqueous acid to give an aldehyde?

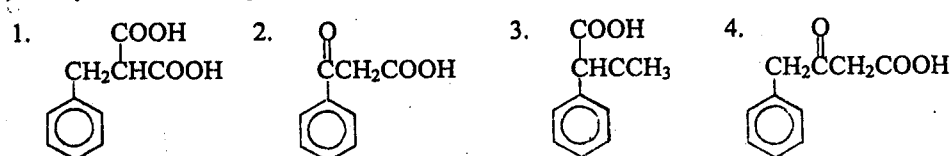


() what is the order of decreasing acidity for the indicated protons (most acidic first)?



1. I > II > III > IV 2. IV > III > II > I 3. III > IV > I > II 4. III > IV > II > I

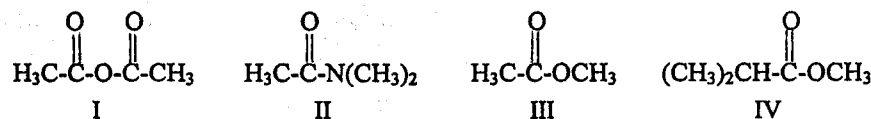
() Phenylacetone is the product from thermal degradation of which compound?



() Many nucleophilic addition reactions of aldehydes and ketones are catalyzed by acid or base. Acids catalyze hydration by:

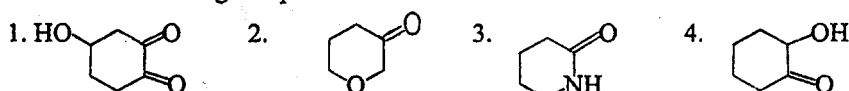
1. making the carbonyl group more electrophilic
2. shifting the equilibrium of the reaction
3. making the carbonyl group less electrophilic
4. converting the water to hydroxide ion, a much better nucleophile

() What is the order of decreasing reactivity towards nucleophilic acyl substitution for the carboxylic acid derivatives? (most reactive first)



1. I < II < III < IV 2. I < III < IV < II 3. II < IV < III < I 4. II < I < III < IV

() Which of the following compounds is a lactone?



() The purpose of the acid catalyst in the hydrolysis of an amide is:

1. to enhance the nucleophilicity of the water molecule
2. to enhance the electrophilicity of the amide carbonyl carbon
3. to enhance the electrophilicity of the water molecule
4. to shift the equilibrium of the reaction

教務處公佈專用

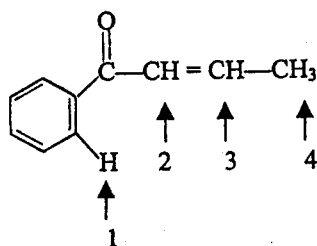
系	科	目	授課教師	考試日期	學號	姓名
醫	藥	有機化學	李淑	90年1月17日第 節		

*①請注意本試題共 6 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。

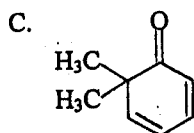
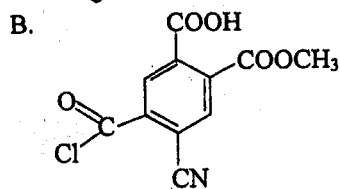
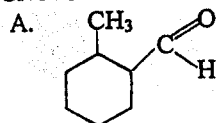
() Arrange the compounds in the following set in order of increasing basicity:

- Lithium hydroxide lithium ethoxide lithium formate lithium acetate
 I II III IV
1. IV < III < I < II 2. II < III < IV < I 3. II < IV < I < III 4. III < I < IV < II

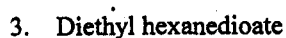
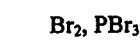
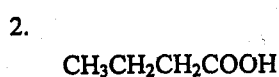
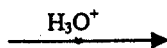
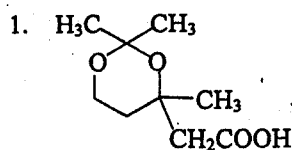
() In the following compound which one of the indicated hydrogen is the most acidic?



II. Give IUPAC names for each structure below. 6 %



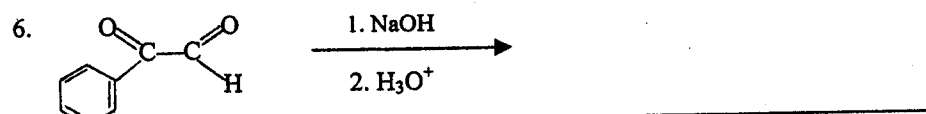
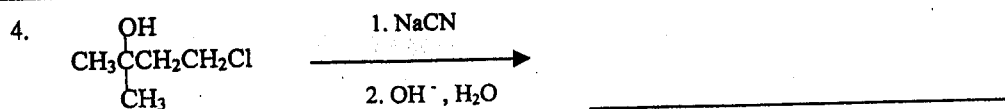
III. Give the major organic product(s) for each of the following reactions or sequences of reactions. Show all relevant stereochemistry. 16 %



教務處公佈專用

系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
藥 學	有機化學	李 誠	90年 1 月 17 日 第 節		

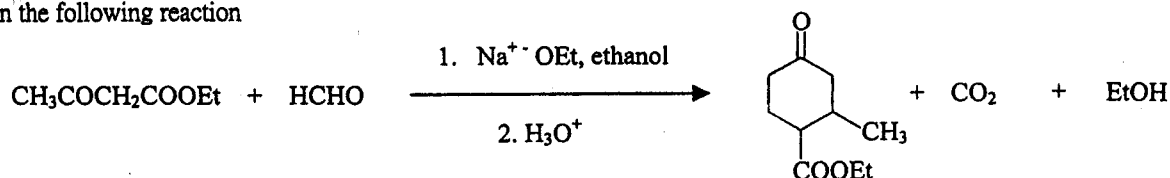
※①請注意本試題共 1 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。



教務處公佈專用

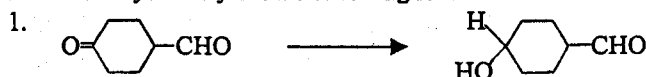
IV. Intramolecular aldol cyclization of 2,5-heptanedione with aqueous NaOH yields a mixture of two enone products in the approximate ratio 9 : 1. Write their structures and show which one is 9.
 Explain. 5 %

V. In the following reaction



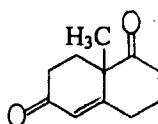
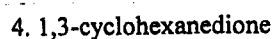
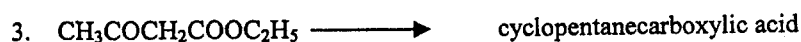
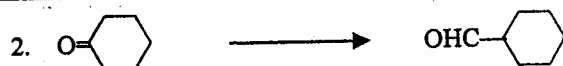
- (a) The first step is an aldol-like condensation between ethyl acetoacetate and formaldehyde to yield an α, β -unsaturated product. Write the reaction, and show the structure of the product.
 (b) The second step is a Michael reaction between ethyl acetoacetate and the unsaturated product of the first step. Show the structure of the product. 4 %
 (a) (b)

VI. How would you carry out the following reactions? 12 %



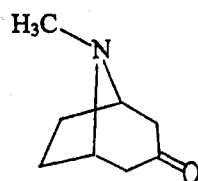
系 級	科 目	授 課 教 師	考 試 日 期	學 號	姓 名
藥 系	有機化學	李 誠	90 年 1 月 17 日 第 節		

※①請注意本試題共 1 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。



教務處公佈專用

VII. Compound A, $\text{C}_{17}\text{H}_{21}\text{NO}_4$. Basic hydrolysis of A leads to methanol, benzoic acid, and another compound B, $\text{C}_9\text{H}_{15}\text{NO}_3$. Oxidation of B with CrO_3 yields a keto acid that readily loses CO_2 on heating, giving C.



C

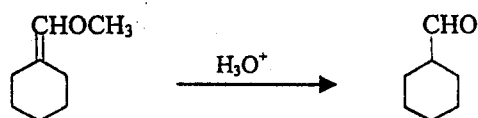
- (a) What is a likely structure for B, neglecting stereochemistry?
 (b) What is a likely structure for A, neglecting stereochemistry?

4 %

(a)

(b)

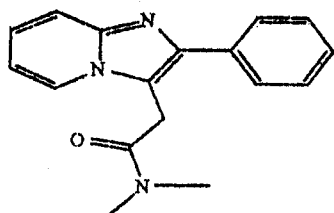
VIII. Propose a mechanism for the following hydrolysis reaction: 3 %



系級	科目	授課教師	考試日期	學號	姓名
藥三上	有機化學	吳建德	90年1月17日第 節		

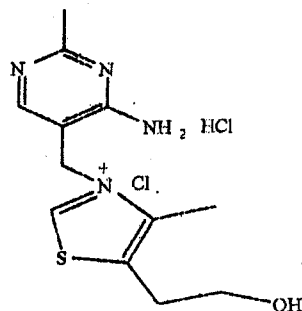
※①請注意本試題共 2 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。

A. Name all the heterocycles of each drug listed below: (20%)



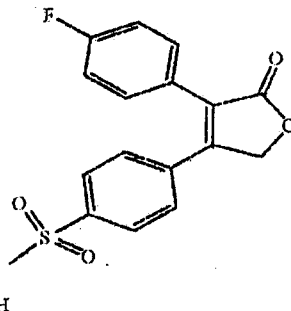
Zolpidem

Ans: _____



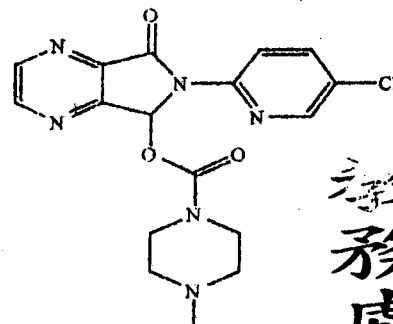
Thiamine HCl

Ans: _____



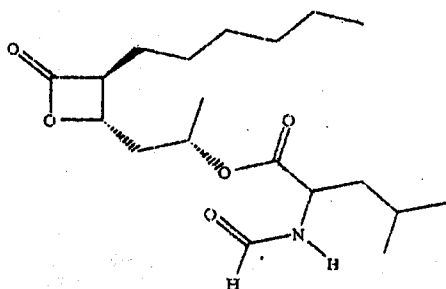
Fofecoxib

Ans: _____



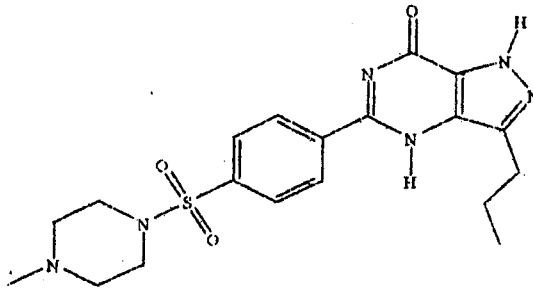
Zopiclone

Ans: _____



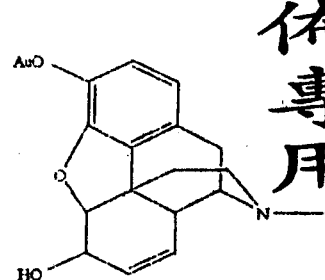
Xenical

Ans: _____



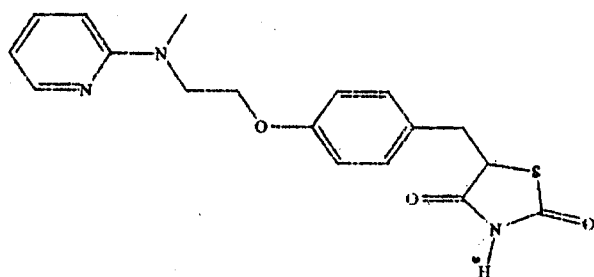
Viagra

Ans: _____



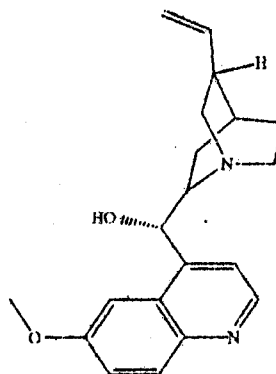
Heroin

Ans: _____



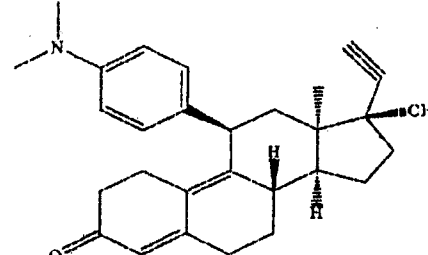
Avandia

Ans: _____



Quinidine

Ans: _____



RU486

Ans: _____

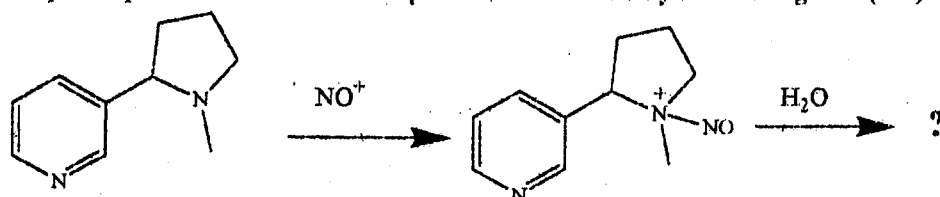
Answers:

- a. Quinuclidine b. Pyridine c. Pteridine d. Thiazole e. Pyrrole f. Piperidine g. 2,4-Thiazolidinedione
 h. Piperazine i. Quinoline j. Aziridine k. Pyrimidine l. Lactam m. Benzofuran n. Thiophene
 o. Isoquinoline p. Pyrazine q. Ethylene Oxide r. Lactone s. Triazole t. Imidazole u. For your reference only

系級	科目	授課教師	考試日期	學號	姓名
藥三乙	有機化學	吳建德	90年1月17日第 節		

※①請注意本試題共 2 張。如發現頁數不足及空白頁或缺印，應當場請求補齊，否則缺少部份概以零分計。
 ②每張試題卷務必填寫(學號)、(姓名)。

Propose a possible mechanism to explain that Nicotine may be carcinogenic: (5%)



教務處公佈專用

Name the following reactions and propose corresponding mechanism: (5%)

