

科目：有機化學

適用：應化系

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

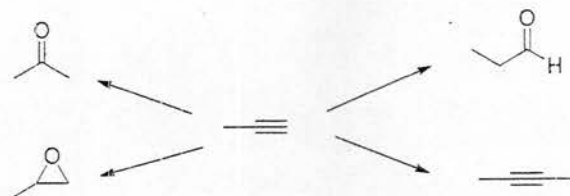
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(1) Please give the following structures. (27%; each 3%)

- | | | |
|--------------|------------------------------------|---------------------------|
| (1) acetone | (2) 2-amino-1,3-thiazole | (3) imidazole |
| (4) DMF | (5) 1-iodo-1-isopropylcyclopentane | (6) toluene |
| (7) pyridine | (8) 1-cyclohexene | (9) 3-sec-butyl-1-heptyne |

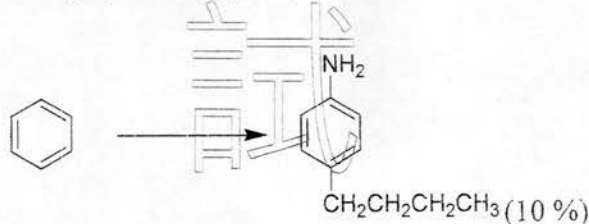
(2) How would you carry out the following conversions? More than one step may be needed in some instances. (16%)



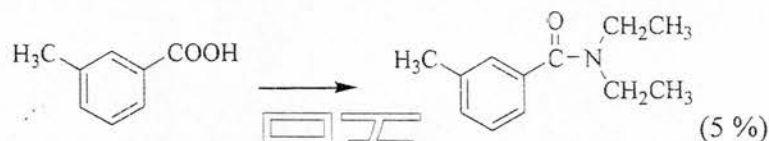
(3) Give the structures of the likely products from reaction of 1 equivalent of HCl with 2-methyl-1,3-cyclohexadiene. Show both 1,2 and 1,4 adducts. (12%)

(4) Using any necessary reagents, show how you would accomplish the following multistep syntheses. (15%)

(a)



(b)



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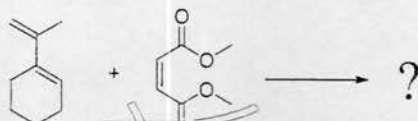
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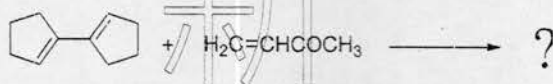
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(5) Predict the product of the following Diels-Alder reaction. (20%)

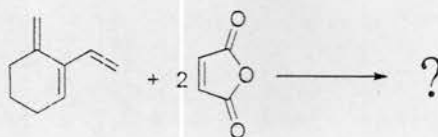
(a)



(b)



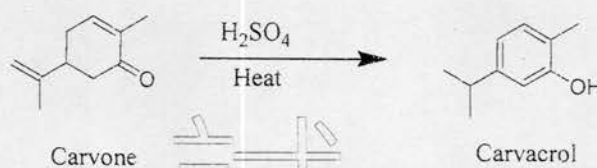
(c)



(d)



(6) Heating carvone with aqueous sulfuric acid converts it into carvacrol. Propose a mechanism for the isomerization. (10%)



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