

等 別：三等考試

類 科：化學工程

科 目：有機化學

考試時間：2 小時

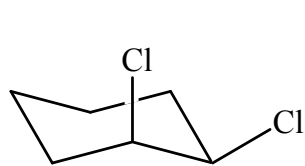
座號：_____

※注意：(一)禁止使用電子計算器。

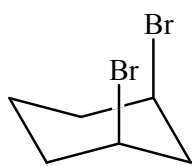
(二)不必抄題，作答時請將試題題號及答案依照順序寫在試卷上，於本試題上作答者，不予計分。

(三)本科目得以本國文字或英文作答。

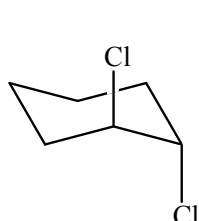
一、下列那些化合物不具有光學活性 (chirality)？請解釋其原因。(10 分)



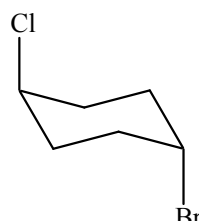
A



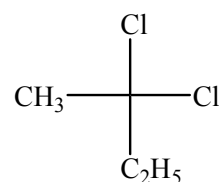
B



C

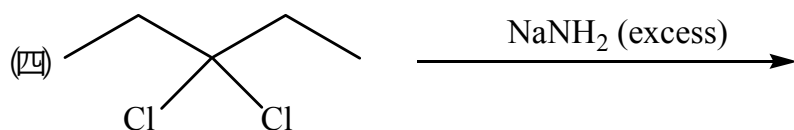
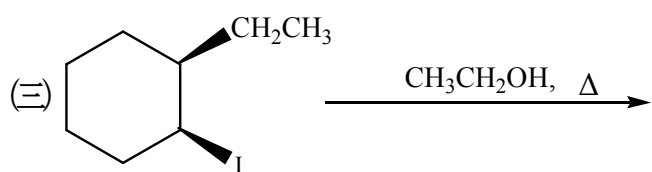
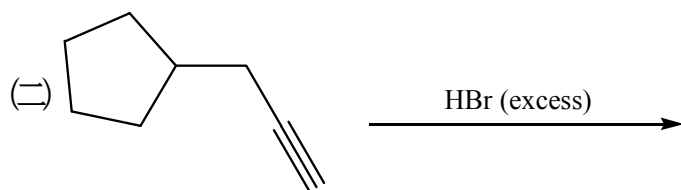
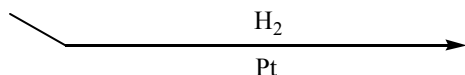
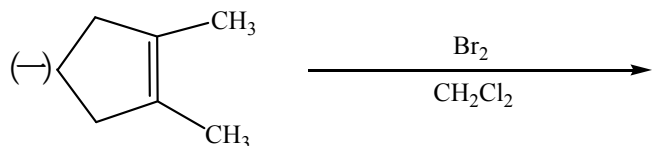


D

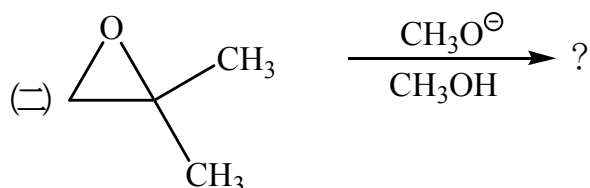
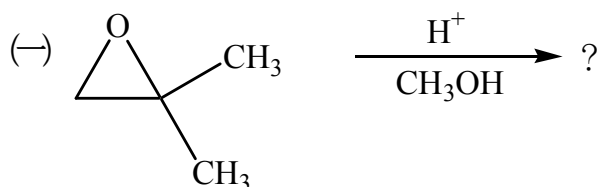


E

二、預測下列反應的主要產物並畫出可能的反應機構：(每小題 5 分，共 20 分)



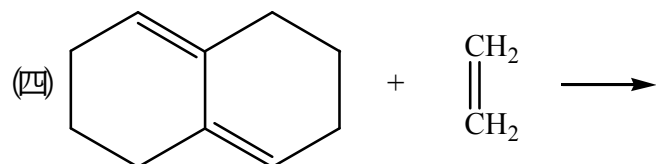
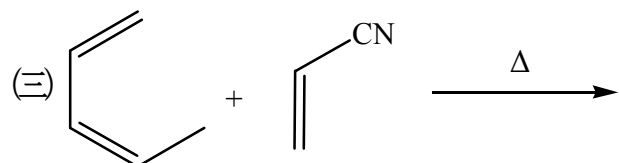
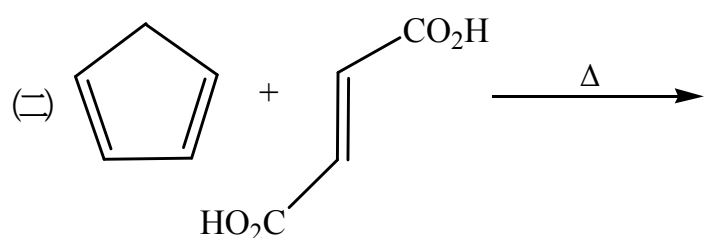
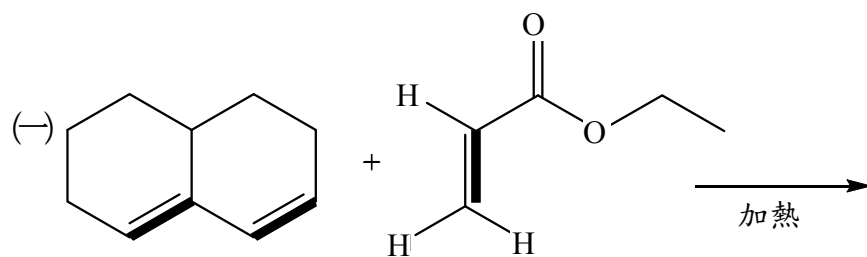
三、請預測下列反應的主要產物並提出可能的反應機構：(每小題 5 分，共 10 分)



(請接背面)

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四、下列雙烯 (diene) 和反應性極高的親雙烯 (dienophile) 進行加熱反應 (Diels-Alder reaction)。請預測下列反應的主要產物並畫出可能的反應機構：(每小題 5 分，共 20 分)

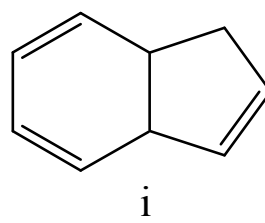
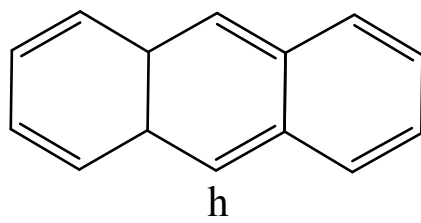
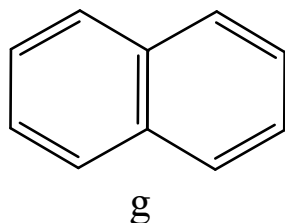
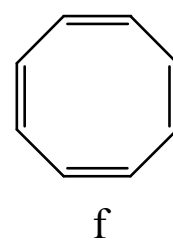
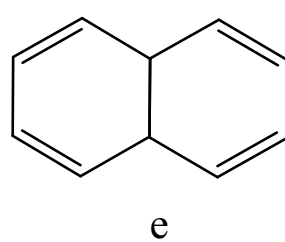
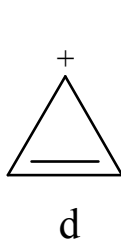
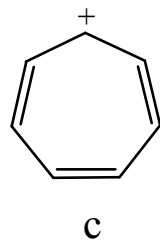
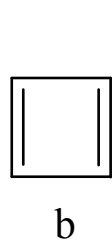
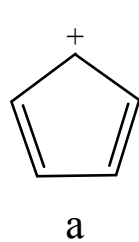


五、請解釋雙分子親核取代反應 (S_N2 reactions) 在下列那一種溶劑中反應會比較快進行？(10 分)

$\text{CH}_3\text{S(=O)CH}_3$
二甲基亞砜 (dimethylsulfoxide)

$\text{CH}_3\text{CH}_2\text{OH}$
乙醇 (ethanol)

六、下列那些化合物屬於芳香性 (aromatic) 分子並解釋原因？(20 分)



七、請提出下列反應可能的反應機構。(10 分)

