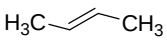
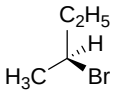
高雄醫學大學 99 學年度 研究所 招生考試

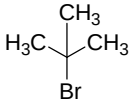
命題系所: 醫藥暨應用化學系碩士在職專班
考試科目: 有機化學(化學系碩專班)

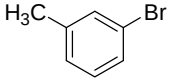
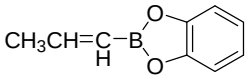
1. (60%) Give the major product of each of the following reactions.

a) $C_4H_9CH{=}CH_2$ $\xrightarrow[2.\ NaBH_4]{1.\ Hg(O_2CCF_3)_2,\ CH_3OH}$

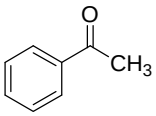
b)  $\xrightarrow{Br_2,\ CH_2Cl_2}$

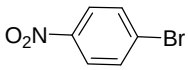
c)  $\xrightarrow{CH_3O^-\ (high\ conc.)}$

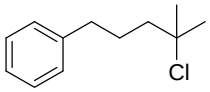
d)  $\xrightarrow[CH_3O^-]{CH_3OH}$

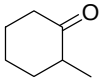
e)  +  $\xrightarrow[NaOH]{Pd(PPh_3)_4}$

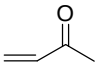
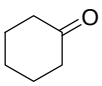
f)  $\xrightarrow[peroxide]{NBS,\ h\nu,\ or\ \triangle}$

g)  $\xrightarrow[H_2SO_4]{HNO_3}$

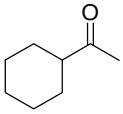
h)  $\xrightarrow{1.\ C_2H_5NH_2/\ \triangle}$

i)  $\xrightarrow[2.\ NBS,\triangle,\ peroxide]{1.\ AlCl_3}$

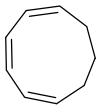
j)  $\xrightarrow[CH_2Cl_2]{LDA,\ -78\ ^0C}$

k)  +  $\xrightarrow[2.\ \triangle]{1.\ OH^-}$

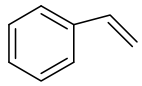
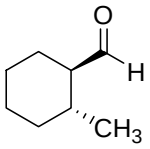
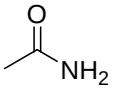
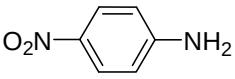
l) $CH_3CH_2C{\equiv}CH$ $\xrightarrow{NaBH_4}$

m)  $\xrightarrow{RCOOH}$

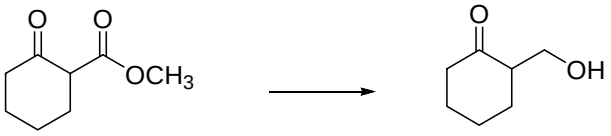
n)  + Br_2 $\xrightarrow[300\ ^0C]{FeBr_3}$

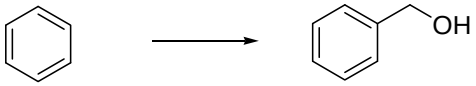
o)  $\xrightarrow{100\ ^0C}$ $\xleftarrow{\quad}$

2. (15%) Give the systematic name for each of the following compounds.

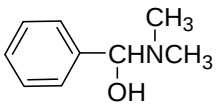
a) 
b) 
c) 
d) 
e) 

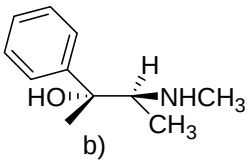
3. (13%) Design a synthesis for the target molecule from the indicated starting material.

a) (6%) 

b) (7%) 

4. (12%) For many centuries, the Chinese have used extracts from a group of herbs known a ephedra to treat ashma. A compound named ephedrine that has been isolated from these herbs was found to be a potent dilator of air passages in the lungs. a) How many stereoisomers are possible for ephedrine? b) The stereoisomer shown below is the one that is pharmacologically active. What is the configuration of each of the asymmetric centers?


a) ephedrine


b)