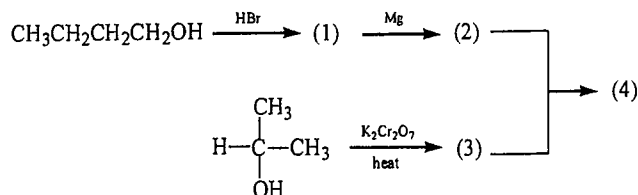
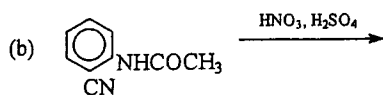
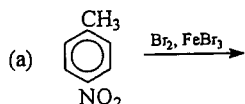


1. Complete the following reactions. (15%)

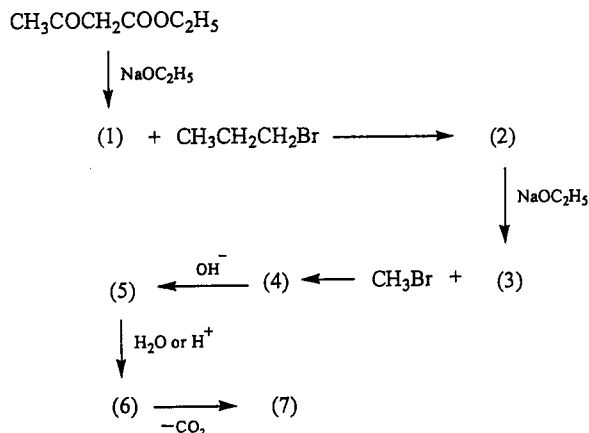
(a)



(b)

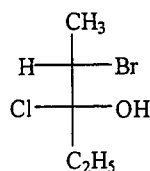


(c)

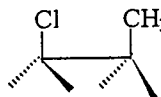
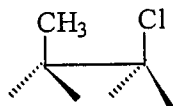
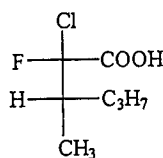


2. Give the IUPAC names, draw the 3-D structures, and specify the configurations (R/S) of the following compounds. (10%)

(1)



(2)



Complete these 3-D structures, R/S of the chiral centers should be specified.

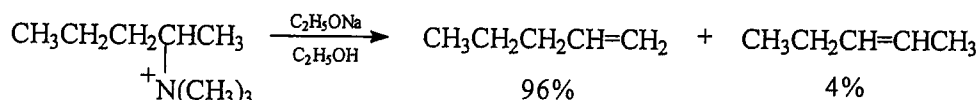
3. Use E2 reaction of dehydrohalogenation of 1-bromo-1,2-diphenylpropane to describe the following terms. (10%)

(a) Stereoselectivity

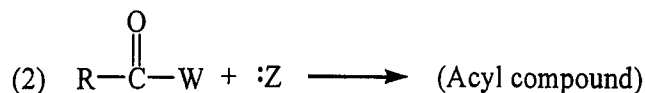
(b) Stereospecificity

(背面仍有題目, 請繼續作答)

4. How do you account for the Hofmann orientation in the E2 elimination from quaternary ammonium salts? (10%)



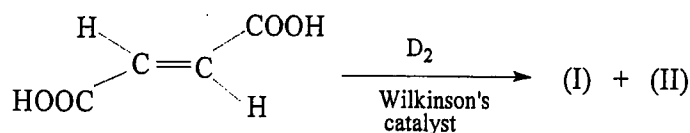
5. Complete the following reactions, and describe the difference between the reactions in detail. (10%)



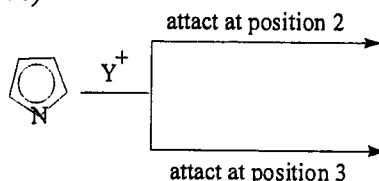
6. As can be seen in following Table, bond lengths and dipole moments of aryl and vinyl halides are smaller than that of alkyl halide. Describe the facts in detail. (10%)

	Bond lengths, Å		Dipole moments, D	
	C-Cl	C-Br	R-Cl	R-Br
C ₂ H ₅ -X	1.77	1.91	2.05	2.02
CH ₂ =CH-X	1.69	1.86	1.44	1.41
C ₆ H ₅ -X	1.69	1.86	1.73	1.71

7. Predict the products of the following reaction and specify the R/S form of the chiral centers. (10%)



8. Draw all possible products of the following reactions. Which product is more stable? Why? (10%)



9. What kind of information can be obtained from (a) NMR, (b) IR, (c) UV, and (d) Mass spectroscopic analyses? (10%)

10. Give the correct order of acidity for the following compounds and describe your reasons in detail. (5%)

