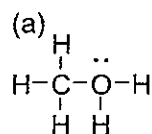
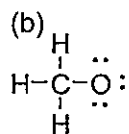


※注意：請於試卷內之「非選擇題作答區」標明題號依序作答。

(1) Please calculate the formal charges on each of the atoms, except hydrogens, of the molecules. (8%)

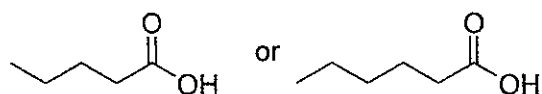


The formal charge on C =  
The formal charge on O =



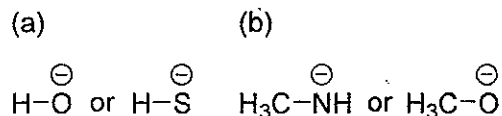
The formal charge on C =  
The formal charge on O =

(2) (a) Which of the compounds would you expect to be more soluble in water? (b) Please account for it. (8%)

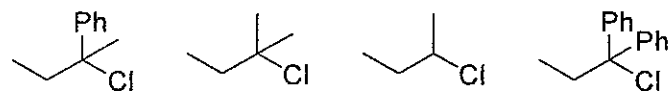


(3) Consider hydrogen cyanide,  $\text{H}-\text{C}\equiv\text{N}$ . (a) What is the hybridization ( $sp^3$ ,  $sp^2$ , or  $sp$ ) at the N? (b) What is the hybridization ( $sp^3$ ,  $sp^2$ , or  $sp$ ) at the C? (8%)

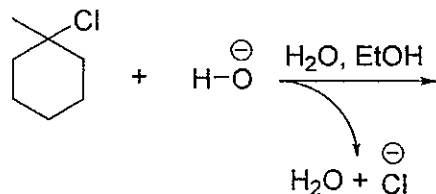
(4) Which anion is the stronger base? (8%)



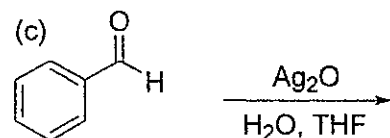
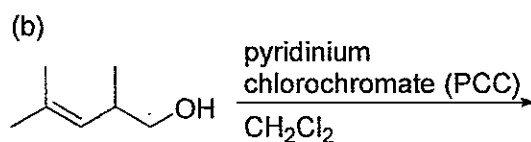
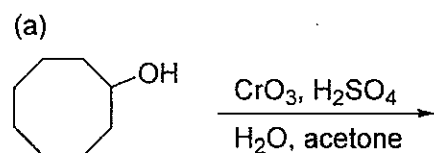
(5) Please arrange the compounds in order of decreasing  $\text{S}_{\text{N}}1$  reaction rate. (12%)



(6) (a) Please give the two products of the elimination reaction. (b) Please indicate which product (isomer) is major. (12%)

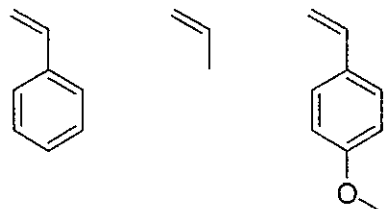


(7) Please give the major product of each reaction below. (12%)

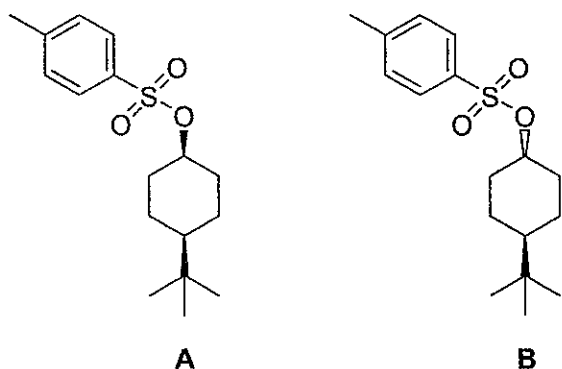


見背面

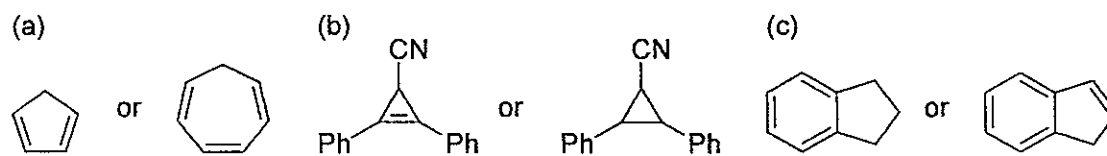
(8) Please arrange the alkenes in order of decreasing rate of reaction with HCl. (8%)



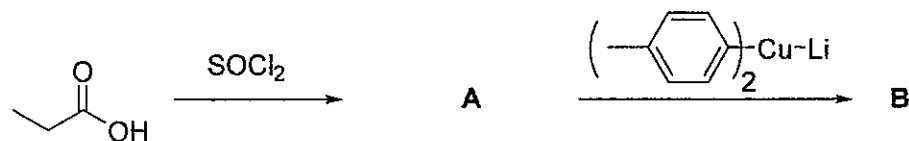
(9) Please indicate which compound (A or B) reacts readily via an E2 mechanism when treated with sodium ethoxide in ethanol but the other does not. (4%)



(10) Which compound is the stronger acid? (12%)



(11) Please provide the chemical structures of the major products A and B. (8%)



試題隨卷繳回