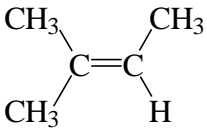
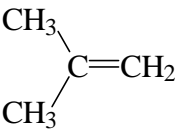
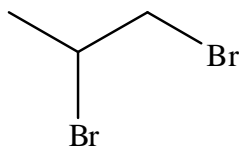


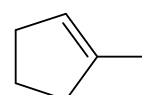
CHEM1611 Problem Sheet 6 (Week 7)

**Work through the ChemCAL modules "Alkenes, Benzene and Alkynes" and "Elimination and Electrophilic Addition Reactions".**

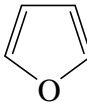
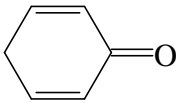
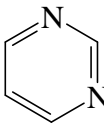
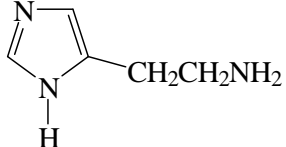
1. Complete the following table by giving the starting material, reagent(s)/conditions, or the *stick structure* of the chief organic product in each reaction, as required.

starting material	reagent(s) and conditions	organic product
	HCl/CCl <sub>4</sub> (solvent)	
	1 M H <sub>2</sub> SO <sub>4</sub>	
CH <sub>3</sub> CH=CH <sub>2</sub>		

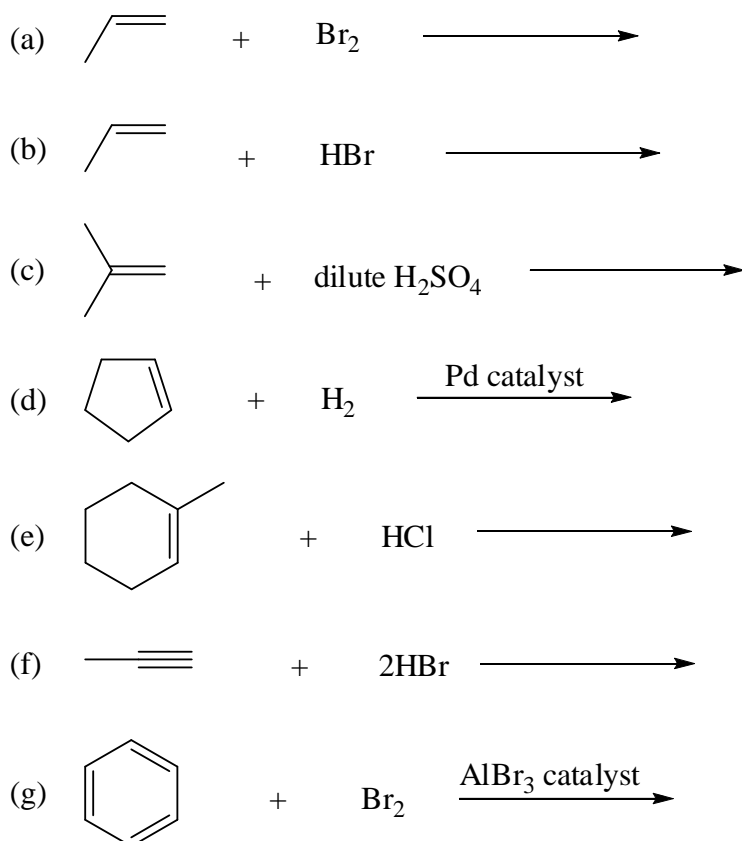
2. When 1-methylcyclopentene is treated with hydrogen bromide in water, two carbocations can be formed.



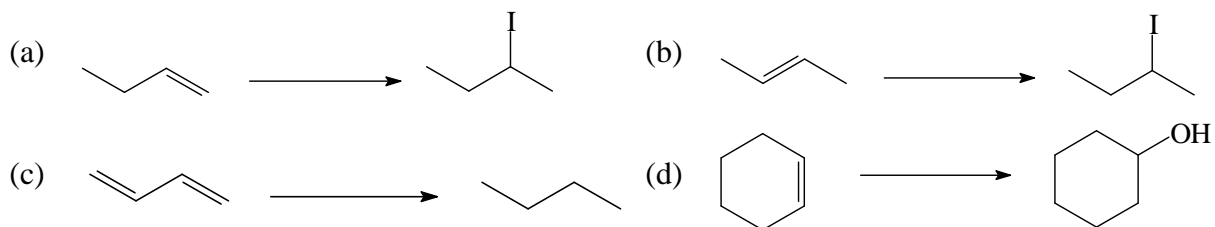
- (a) Give the structures of the carbocations and indicate which is more stable  
 (b) Give the constitutional formulae of the products arising from the more stable carbocation in the above reaction.
3. Which of the following compounds are aromatic?

COMPOUND A	COMPOUND B	COMPOUND C	COMPOUND D
			

4. What is the major product in the following reactions?



5. What reagents would effect the following changes?



6. Complete the following table by giving the stick structure of the chief organic product.

starting material	reagent(s)/conditions	organic product
CH <sub>3</sub> CH <sub>2</sub> Br	KCN in ethanol (solvent)	
CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> I	CH <sub>3</sub> O <sup>⊖</sup> Na <sup>⊕</sup> in methanol (solvent)	
CH <sub>3</sub> I	(CH <sub>3</sub> CH <sub>2</sub> ) <sub>3</sub> N	
CH <sub>3</sub> CH <sub>2</sub> Cl	CH <sub>3</sub> CH <sub>2</sub> C≡C <sup>⊖</sup> Na <sup>⊕</sup>	