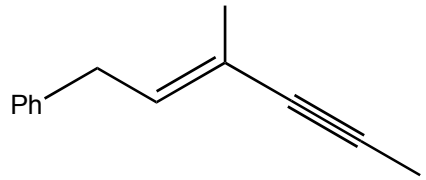
Alkanes, Alkenes and Alkynes Tutorial Problems
Lecture 4

1. Explain in terms of orbital overlap why the radicals obtained by abstraction of hydrogen from methyl chloride, dichloromethane and chloroform are more stable than the parent methyl radical.

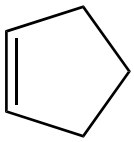
2. 3-Methyl-1-phenyl-hex-2-en-4-yne, **A** , may be monobrominated by N-bromosuccinimide in the presence of dibenzoyl peroxide to give more than one product. Indicate the positions where the bromine would be situated in the products.



A

With the help of your tutor, sketch what you would expect the ^{1}H nmr spectrum of **A** to look like and indicate how it would change in the products.

3. Give the structure and stereochemistry of the product formed in the reactions of each of the following reagents with cyclopentene, **B**.



B

(a) Bromine in tetrachloromethane
(b) Aqueous sulphuric acid
(c) Iodine monochloride