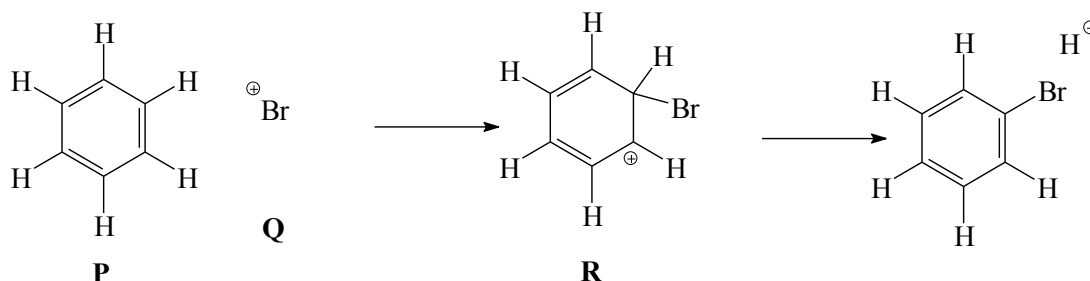


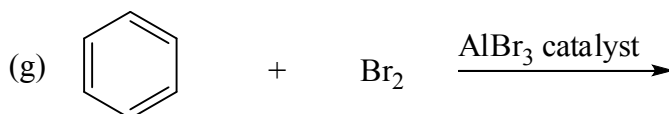
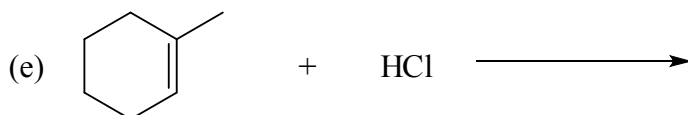
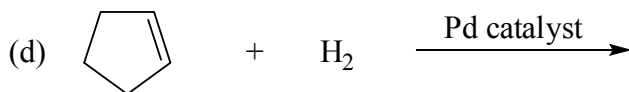
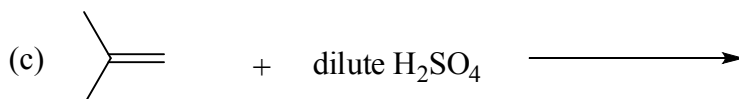
See the 'Organic Spectroscopy' website for more information and practice:
<https://scilearn.sydney.edu.au/OrganicSpectroscopy/>

1. Consider the reaction below:

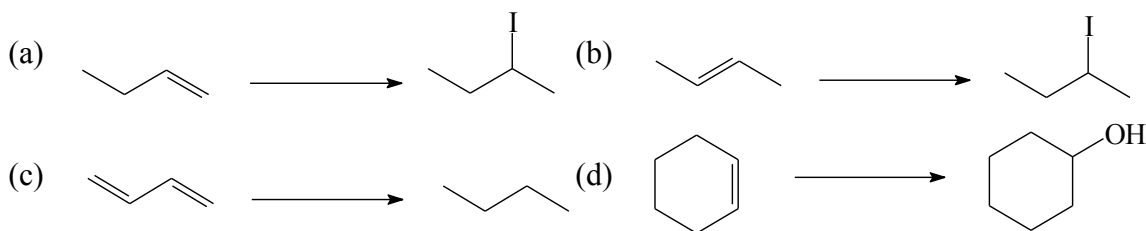


- Which species **P - R** is acting as the electrophile?
- Which species **P - R** is aromatic?
- Which species **P - R** is a carbocation intermediate?
- Draw in the curly arrows for this reaction.
- Classify this type of reaction.

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



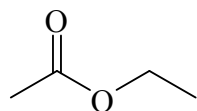
3. What reagent would effect the following changes?



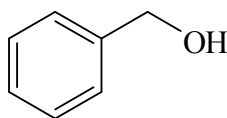
4. Low resolution mass spectrometry indicated a molecular ion at $m/z = 58$. The compound could be C_3H_6O or C_4H_{10} or $C_2H_6N_2$. High resolution mass spectrometry gave a value of $m/z = 58.0530$. Using the following more accurate atomic weight data determine which compound it is.

Data: 1H 1.0078; ^{14}N 14.0031; ^{12}C 12.0000; ^{16}O 15.9949

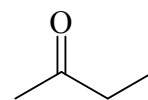
5. Consider the following six compounds A - F.



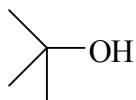
A



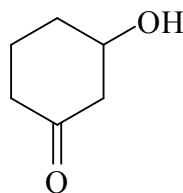
B



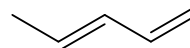
C



D



E



F

- Which compound(s) will give a molecular ion at $m/z = 74$ in the mass spectrum?
- Which compound(s) will show a strong absorption in the UV spectrum?
- Which compound(s) will show absorption around 1700 cm^{-1} in the infrared region?
- Which compound(s) will show absorption around 3500 cm^{-1} in the infrared region?
- Which compound(s) will *not* show absorption either around 1700 or 3500 cm^{-1} in the infrared region?