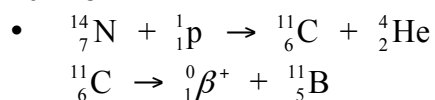


CHEM1611 Chemistry 1A (Pharmacy) - June 2012

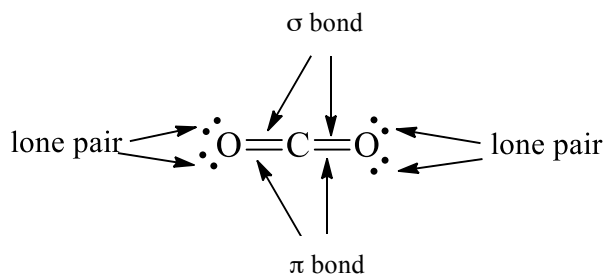
2012-J-2



- 486 nm
- 246 kJ mol⁻¹

2012-J-3

•



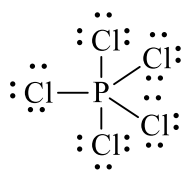
as oxygen is more electronegative than carbon. The shared electrons in this bond lie more towards the oxygen.

No. Each C–O bond is polar, but the symmetry of the molecule means that the 2 bond moments cancel each other.

- 1.04

2012-J-4

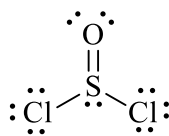
•



trigonal bipyramidal

trigonal bipyramidal

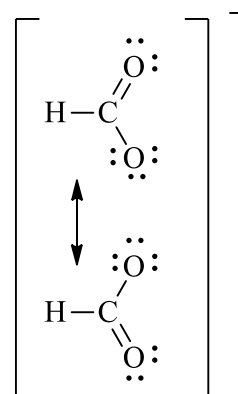
dispersion



tetrahedral

trigonal pyramidal

dispersion and
dipole-dipole

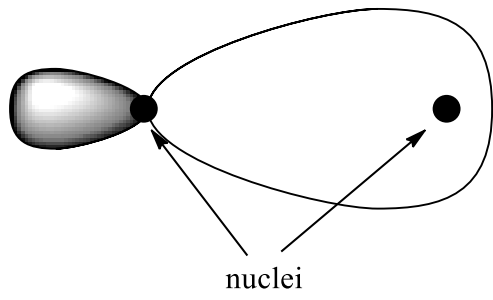
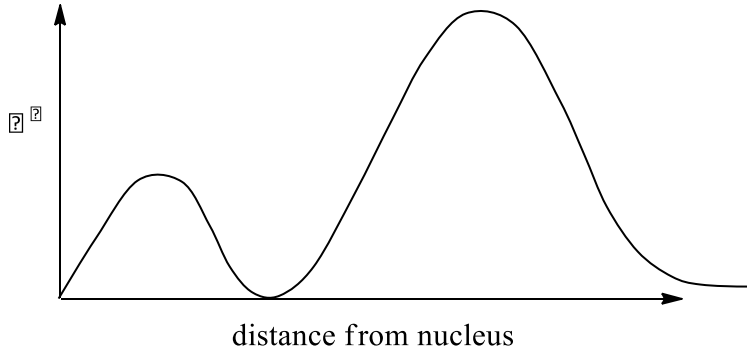
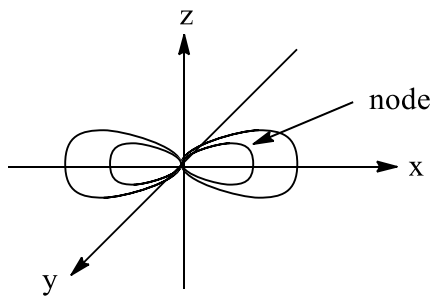


trigonal planar

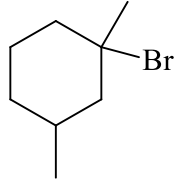
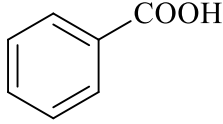
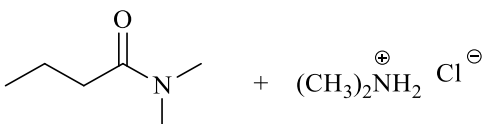

trigonal planar

2012-J-5

•

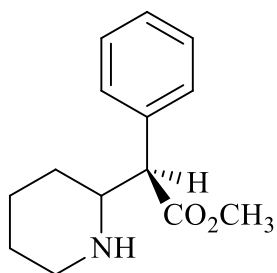


2012-J-6

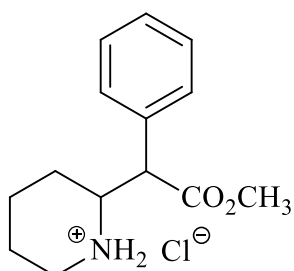
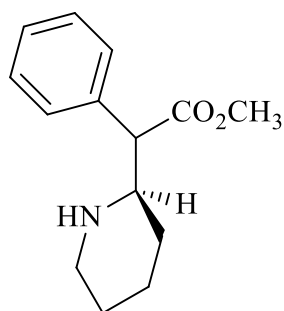
		
	1. NaOH 2. CH ₃ I	
		
3-hydroxybutanal	[Ag(NH ₃) ₂] ⁺ / OH ⁻	
		
1-propyl acetate		
	Zn / H ⁺	

2012-J-7

- C₁₄H₁₉NO₂
aromatic ring, ester, secondary amine
2



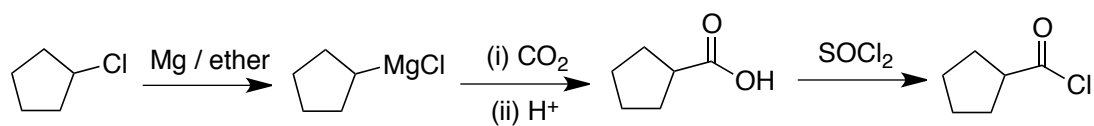
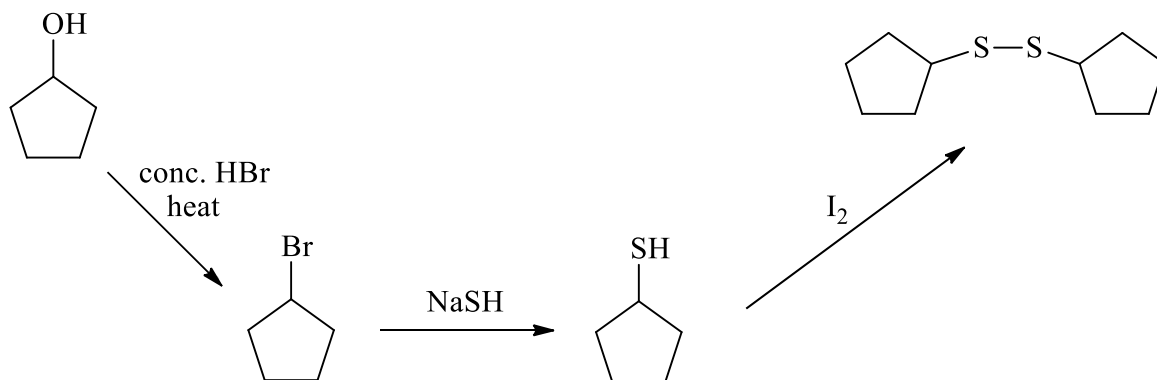
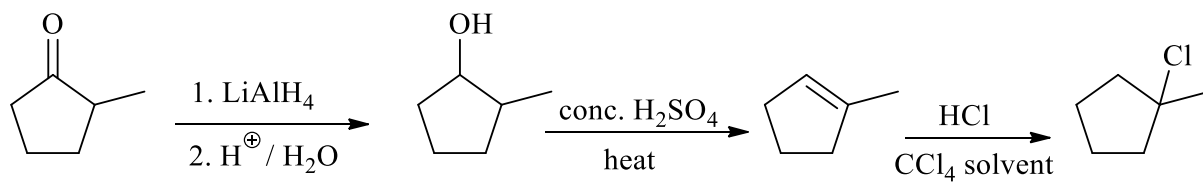
or



The hydrochloride salt is soluble in water, which generally means better bioavailability.

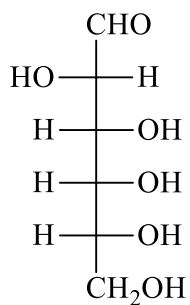
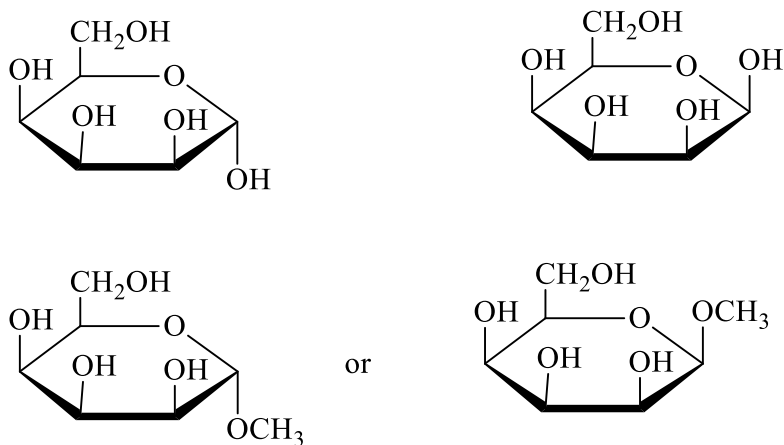
Salt will have better stability - amines prone to aerial oxidation.

2012-J-8

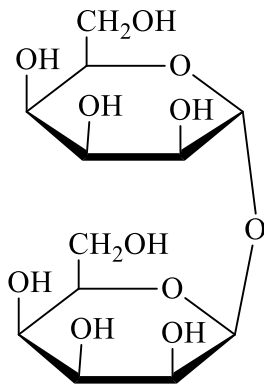


2012-J-9

•

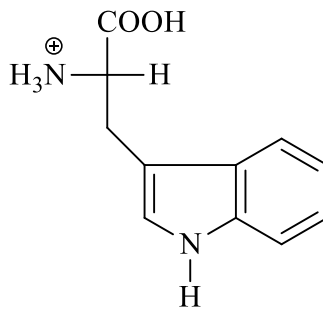
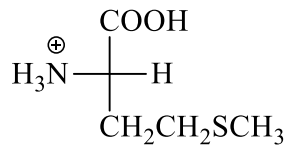
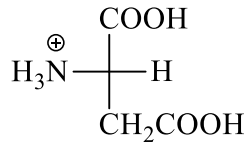
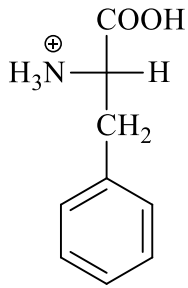


2012-J-9 (cont)



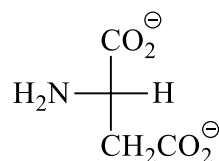
2012-J-10

•

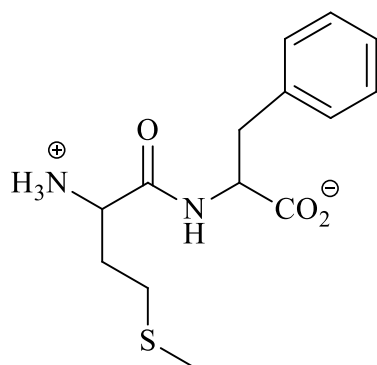
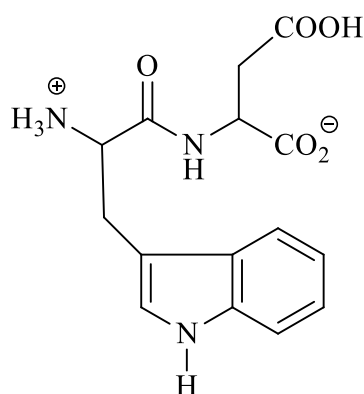
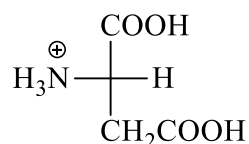


2012-J-11

pH = 12

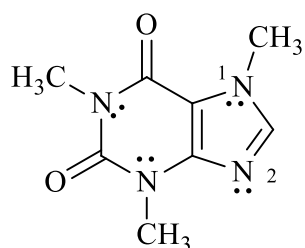
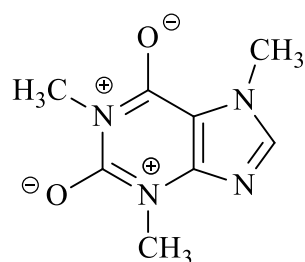


pH = 1



2012-J-12

•



N¹ is *sp*² hybridised. The “lone pair” is in the unhybridised *p* orbital and is part of the aromatic system so is unavailable to act as a proton acceptor.

N² is also *sp*² hybridised, but here the lone pair is in the *sp*² hybrid orbital pointing away from the ring system. It is able to act as a proton acceptor, so this N is basic.

The “lone pairs” on the two N’s in the 6-membered ring are (at least partially) involved in the resonance stabilisation of the amides and the aromatic system as shown in the first part of this question. These electrons are delocalised and hence not available to act as proton acceptors.