Chemistry 1B Adv/SSP (CHEM1902/1904) November 2005

2005-N-2

- 6.0 mol L^{-1} s^{-1}

  9.0 mol L^{-1} s^{-1}

  increase

  no change

  decrease

  increase

- potassium tetracyanoplatinate(II)

  hexaaquacobalt(II) chloride

2005-N-3

- pH = 8.9

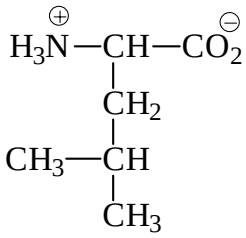
  8.4×10^{-6} M

  0.21 mol

2005-N-4

- **A**: hydrogen bonding, dipole-dipole forces, London dispersion forces
  B: London dispersion forces

  All amino acids can undergo an acid-base reaction with themselves. Leucine gives the structure on the right. Being composed of positive and negative charges, the dominant intermolecular force in the crystal is ionic bonding. Hence the abnormally high melting point for a low molecular weight organic compound.

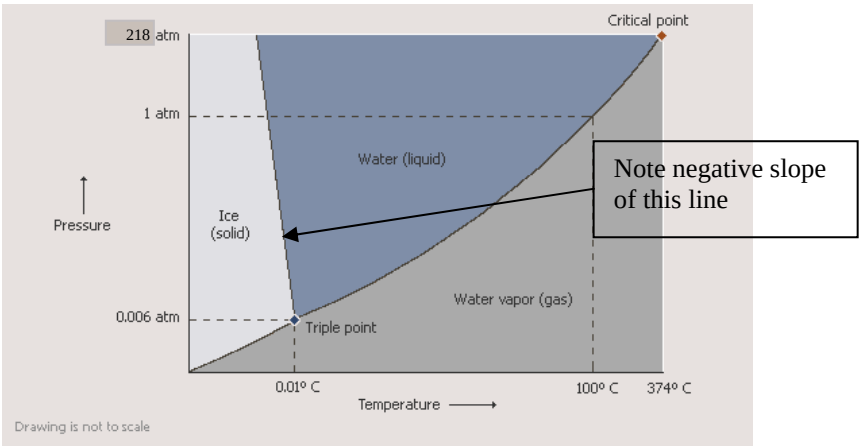


- electron transport

  Pt

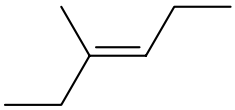
  Forms octahedral complex which can bind molecular O_2.

2005-N-5

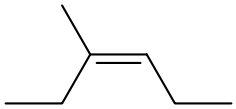
- 

2005-N-6

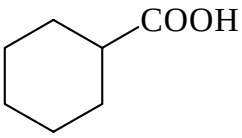
•

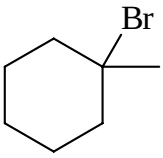


+

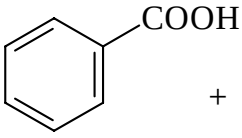


(*E*)-3-methyl-3-hexene (*Z*)-3-methyl-3-hexene

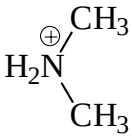




1-bromo-1-methylcyclohexane

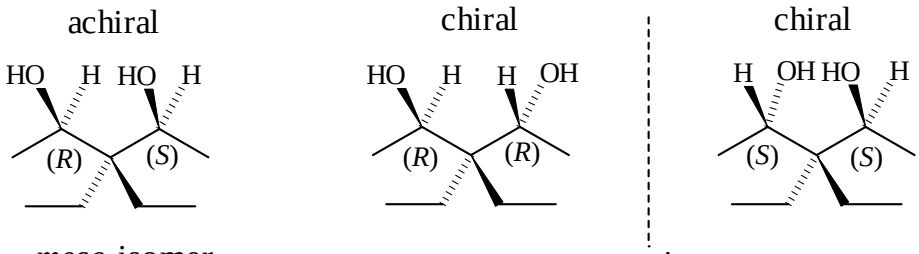


+



2005-N-7

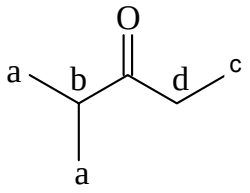
•



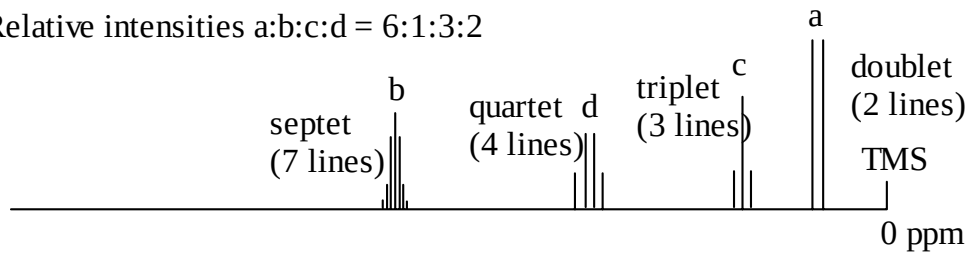
(2*R*, 4*S*)- (2*R*, 4*R*)- (2*S*, 4*S*)-
-3,3-diethylpentane-2,4-diol

2005-N-8

•



Relative intensities a:b:c:d = 6:1:3:2



constitutional isomers

1) IR spectrometry: **Y** has strong carbonyl absorption at about 1700 cm^{-1}. **Z** does not.

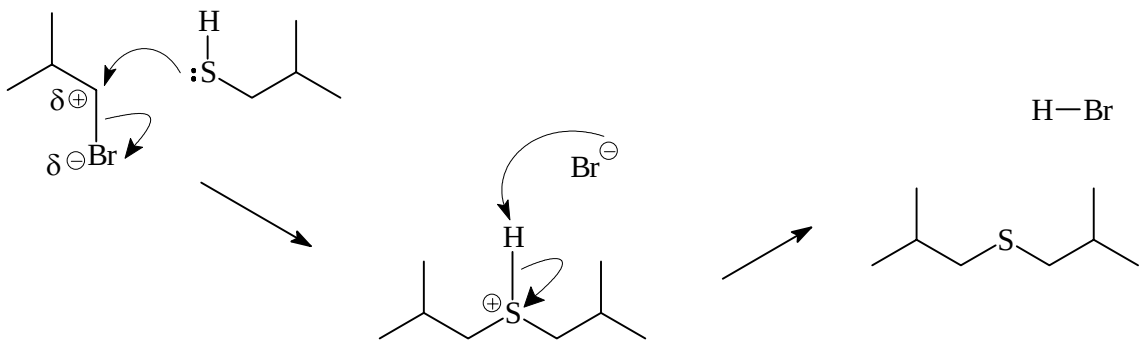
2) **Z** has 5 signals in ^{1}H NMR spectrum, **Y** has 4 signals in ^{1}H NMR spectrum.

3) **Z** has 6 signals in ^{13}C NMR spectrum, **Y** has 5 signals in ^{13}C NMR spectrum.

4) fragmentation pattern in mass spectrum

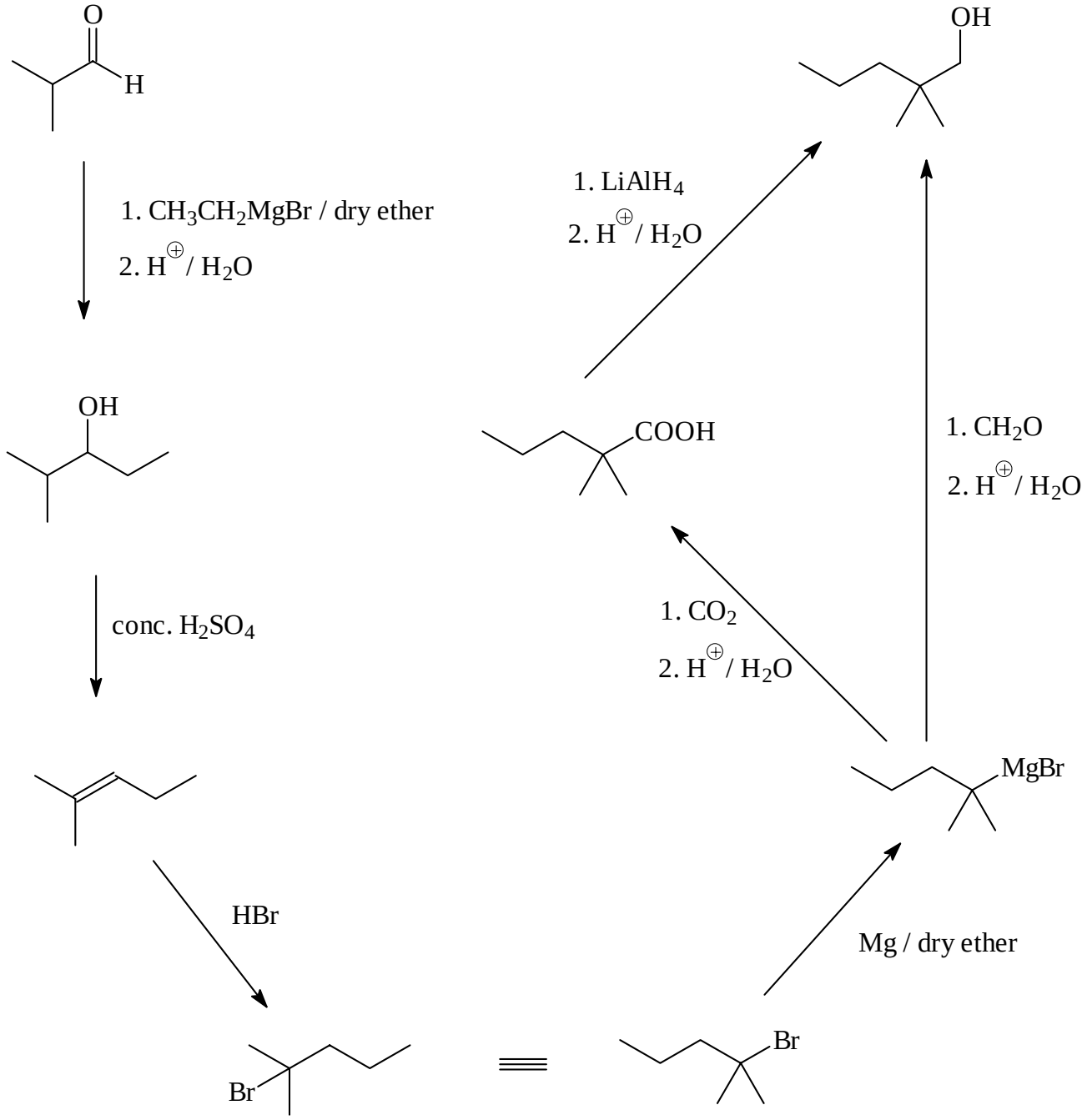
2005-N-9

•



2005-N-10

•


O
H
1. CH_3CH_2MgBr / dry ether
2. $H^{\oplus}$ / H_2O
OH
conc. H_2SO_4
HBr
Br
Br
Mg / dry ether
MgBr
1. CO_2
2. $H^{\oplus}$ / H_2O
COOH
1. $LiAlH_4$
2. $H^{\oplus}$ / H_2O
1. CH_2O
2. $H^{\oplus}$ / H_2O
OH