CHEMISTRY 1B (CHEM1102) - November 2006

2006-N-2

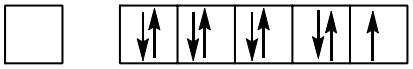
- 1.9×10^{-3} g L^{-1}

2006-N-3

- First order with respect to each reagent

  Rate constant = 5.0×10^{4} L mol^{-1} s^{-1}

2006-N-4

- F is more electronegative than O, so H–F is more polarised bond than O–H. This facilitates dissociation into F^- and H^+ ions.
  I is much larger atom than F, so H–I bond is much longer and weaker than H–F, so HF is weaker acid than HI.
- Cu^{2+} 
  4s 3d
- Cu^{2+} is paramagnetic as there is an unpaired *d* electron.
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Formula	Oxidation state of transition metal	Coordination number of transition metal	Number of *d*-electrons in metal in complex ion	Species formed upon dissolving in water
$Na_2[CoCl_4]$	II	4	7	Na^+, $[CoCl_4]^{2-}$
$[Ni(NH_3)_5(H_2O)]SO_4$	II	6	8	$[Ni(NH_3)_5(H_2O)]^{2+}$, SO_4^{2-}
$[Cr(en)_3]Br_3$	III	6	3	$[Cr(en)_3]^{3+}$, Br^-

2006-N-5

- 2.62

  8.97

  4.53

  HN_3

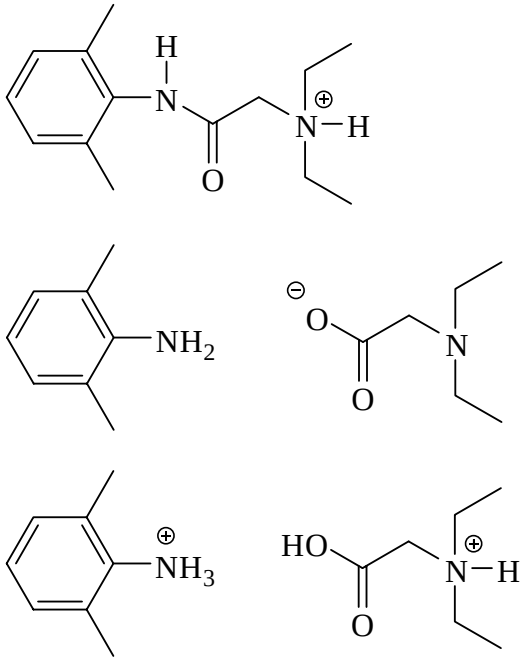
2006-N-6

- Allotropes are different structural forms of the same element (eg C: diamond and graphite; P: red and white phosphorus; oxygen O_2 and ozone O_3)

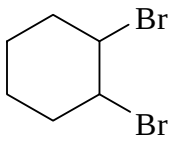
2006-N-7

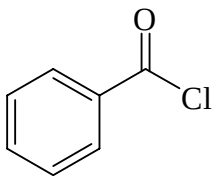
- $C_{14}H_{22}ON_2$

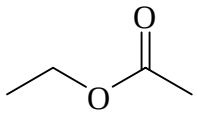
  a: amide; b: amine (tertiary)

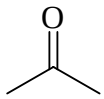


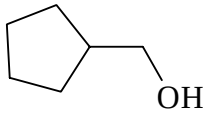
2006-N-8

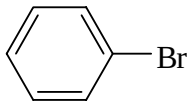
- 





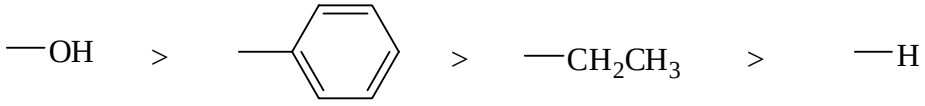


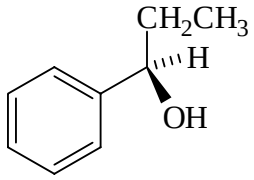




2006-N-9

- Racemic mixture





2006-N-9 (cont.)

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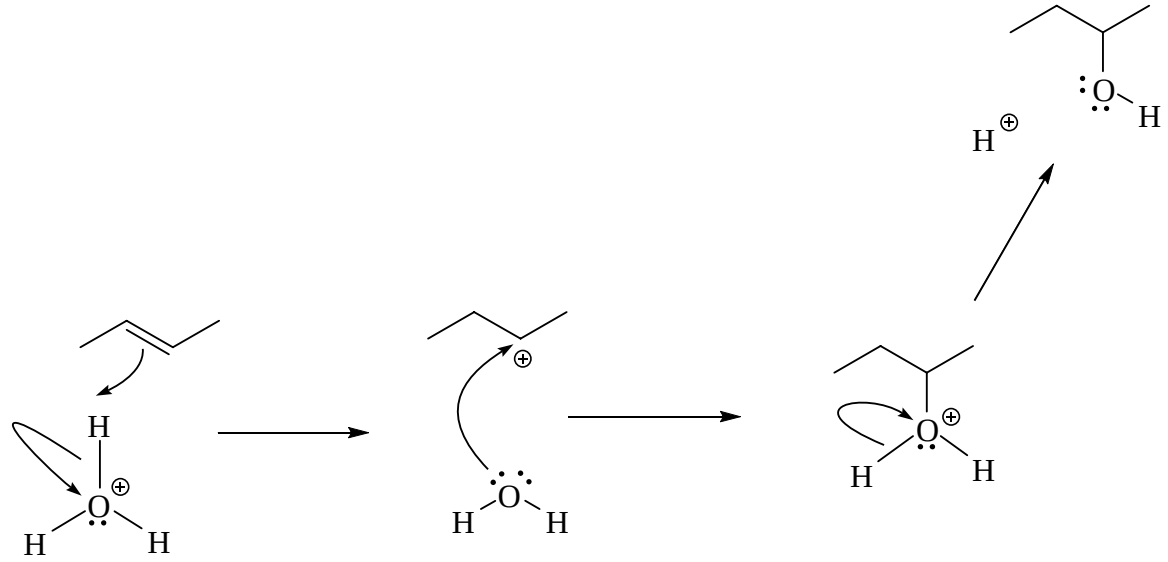

electrophilic addition

2006-N-10

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