FUNDAMENTALS OF CHEMISTRY 1B (CHEM1002) - November 2004

2004-N-2

- Ionisation energies increase across a period in the periodic table because the increasing nuclear charge holds the electrons more tightly. Hence, in any period, the Group I element is the one that most easily loses its electron (from the *s* subshell). This electron is then available to reduce another species.
- Cu^{2+} has the electron configuration of $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^9$. Hence Cu^{2+} ion has an unpaired electron and must therefore be paramagnetic.

3*d*	↑↓	↑↓	↑↓	↑↓	↑

II	4	8	$K^+(aq)$, $[Ni(CN)_4]^{2-}(aq)$
III	6	3	$[Cr(NH_3)_5Cl]^{2+}(aq)$, $Cl^-(aq)$
III	6	6	$[Co(en)_3]^{3+}(aq)$, $Br^-(aq)$

2004-N-3

- Allotropes are different molecular forms of the same element.

  Graphite and diamond are two allotropes of carbon

  White and red phosphorus (many other examples possible)
- Rate = $k[NO]^2[Cl_2]$ $k = 180\ L^2\ mol^{-2}\ s^{-1}$

2004-N-4

- 1.99

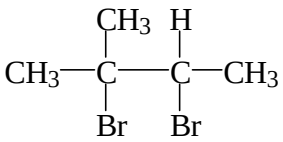
  8.23

  3.27

  HNO_2

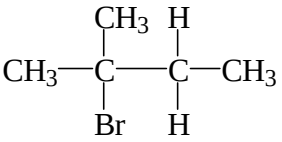
2004-N-5

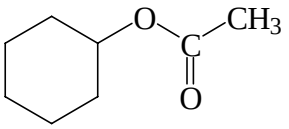
-



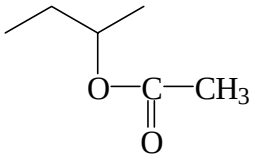
2-methyl-2-butene

2004-N-5 (continued)

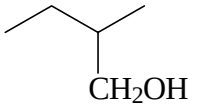




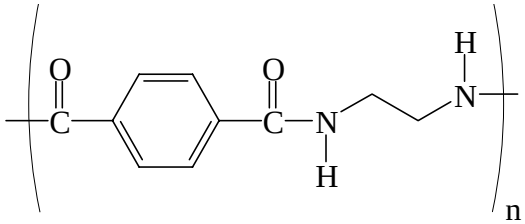
+ CH_3COOH

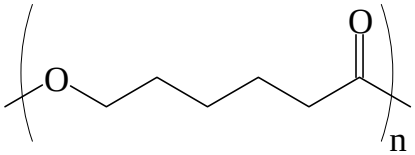


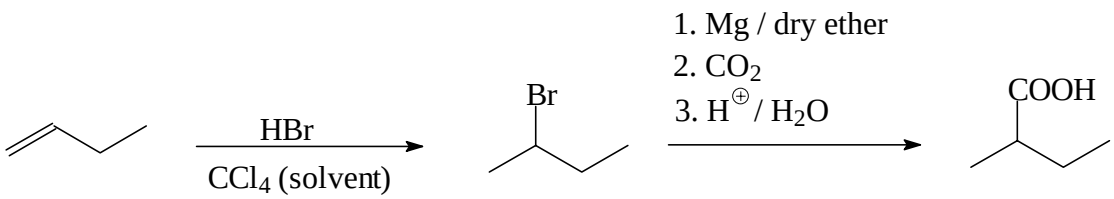
2-bromobutane



2004-N-6

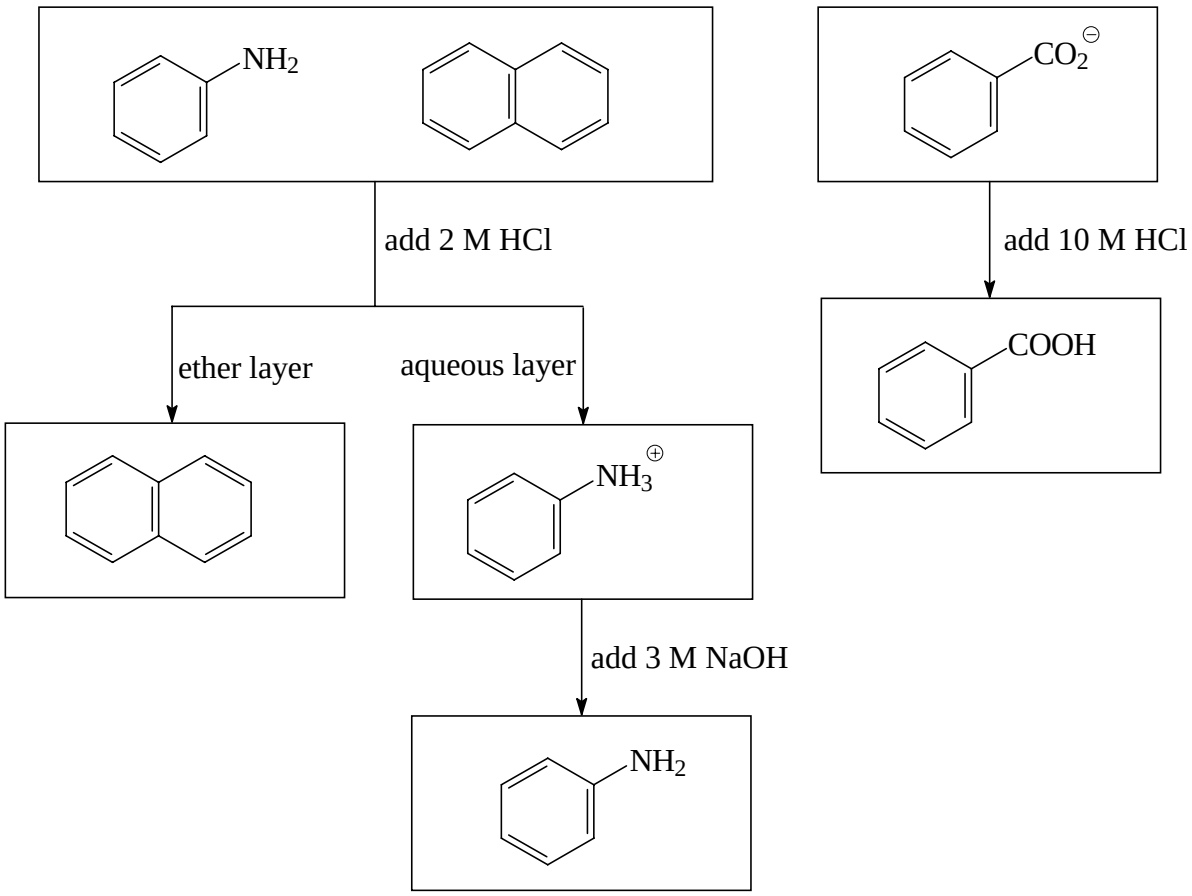
- 



- 

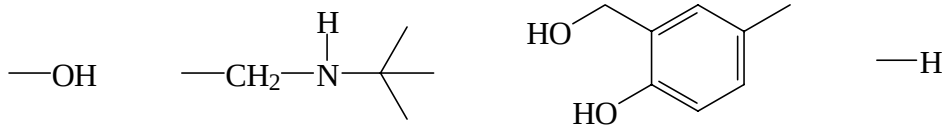
2004-N-7

•



2004-N-8

• $C_{13}H_{21}O_3N$



(*R*)

a = phenol **b** = amine