

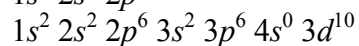
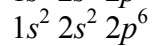
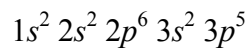
CHEM1108 Chemistry 1A (Life Sciences) - June 2009

2009-J-2

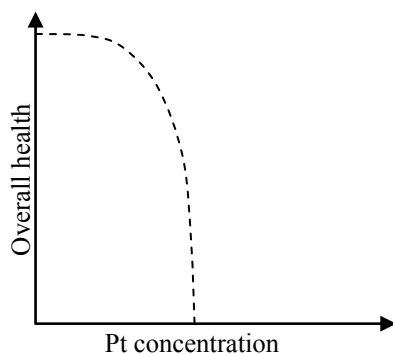
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	sodium hydrogensulfate
AsCl <sub>3</sub>	
	chromium(III) chloride-6-water
Ag <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	

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- It treats testicular cancer.  
Sulfur containing enzymes in the kidneys.



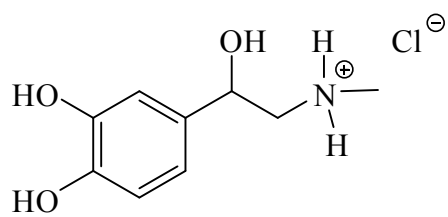
2009-J-3

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A: H-bonding, dipole-dipole, dispersion forces

B: dispersion forces

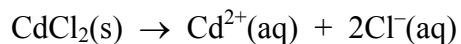
C: H-bonding, dipole-dipole, dispersion forces



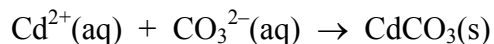
O1	tetrahedral	$sp^3$	bent	109°
N2	tetrahedral	$sp^3$	trigonal pyramidal	109°
C3	trigonal planar	$sp^2$	trigonal planar	120°

**2009-J-4**

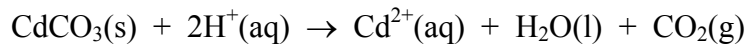
- Dissolve the cadmium chloride in water.



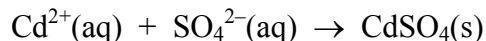
Add a solution of sodium carbonate. Cadmium carbonate will precipitate.



Filter off and wash the precipitate and then dissolve it in dilute sulfuric acid.

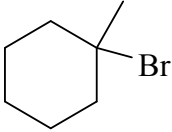
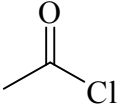
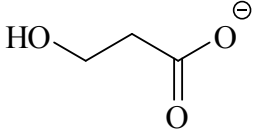

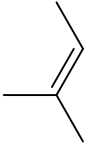


Evaporate the solution to give cadmium sulfate.

**2009-J-5**

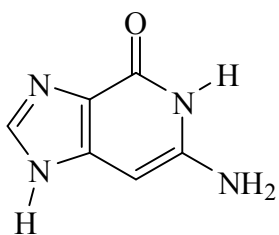
- The second ionisation of Na will be off the scale as a core electron is ionised. (Actual value  $> 4500 \text{ kJ mol}^{-1}$ )  $\text{Mg}^{+}$  is isoelectronic with Na,  $\text{Al}^{+}$  is isoelectronic with Mg, *etc.*, so the second ionisations of the other elements follow the same trends as the first ionisations (for exactly the same reasons), but displaced one atomic number to the right and at a slightly higher energy (as  $Z_{\text{eff}}$  is greater).

**2009-J-6**

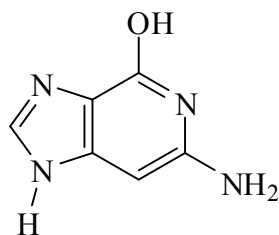
		
		phenyl acetate
3-bromopentane	$(\text{CH}_3)_3\text{N}$	
		
		
cyclopentanone	excess $\text{CH}_3\text{OH} / \text{H}^{\oplus}$ cat. heat	
		

2009-J-7

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HOCH<sub>2</sub>CH<sub>2</sub>OH



CH<sub>2</sub>O

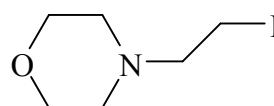
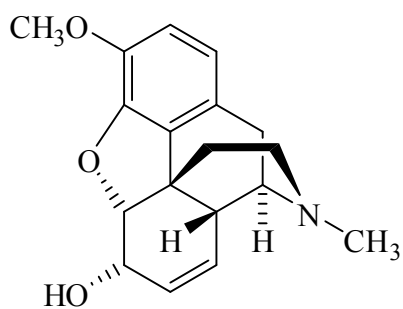
2009-J-8

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C<sub>17</sub>H<sub>19</sub>O<sub>3</sub>N

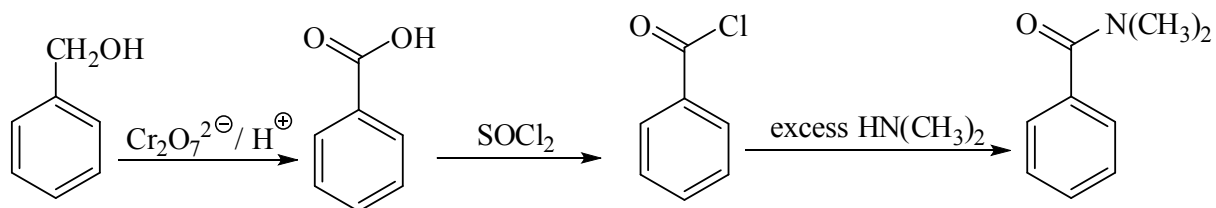
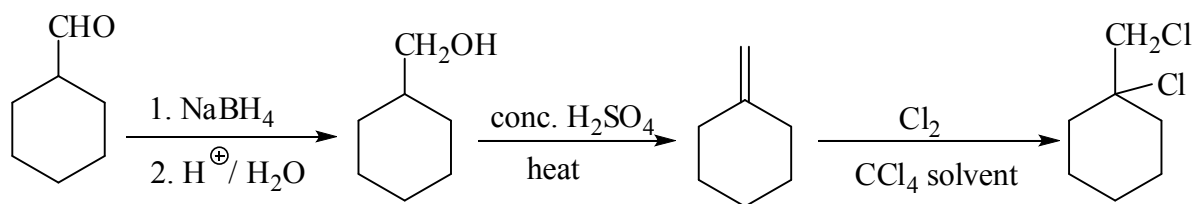
5

phenol, amine, alcohol, ether, alkene



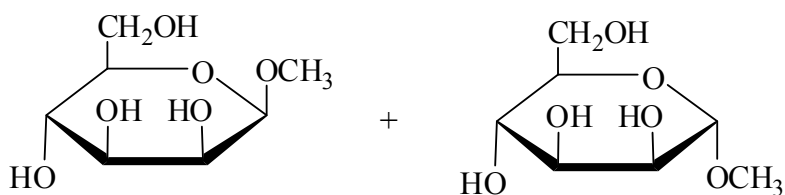
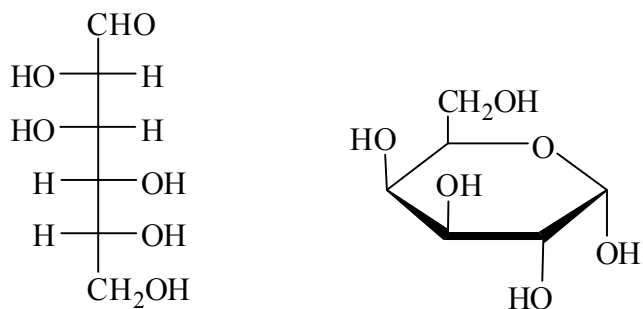
2009-J-9

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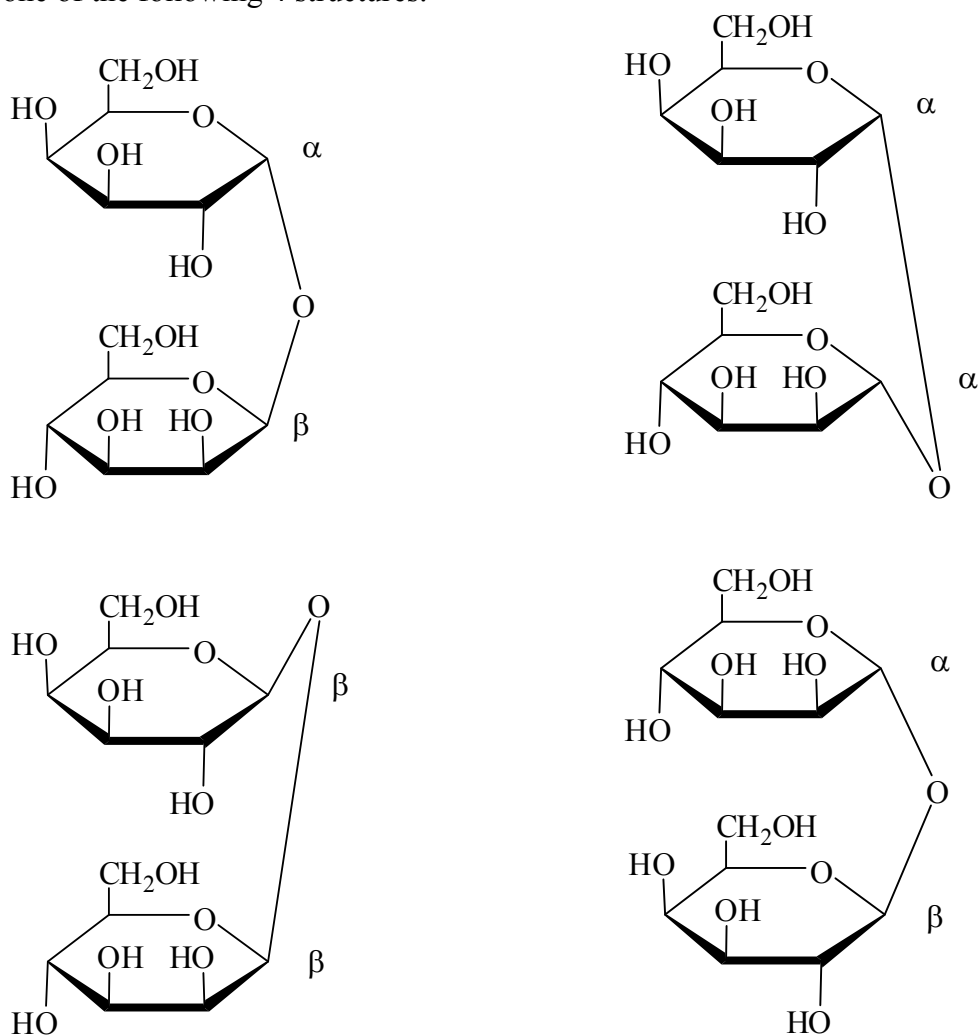


2009-J-10

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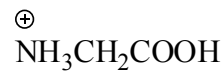
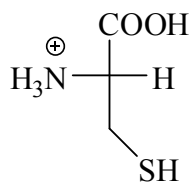
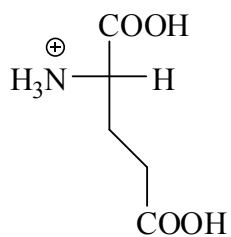
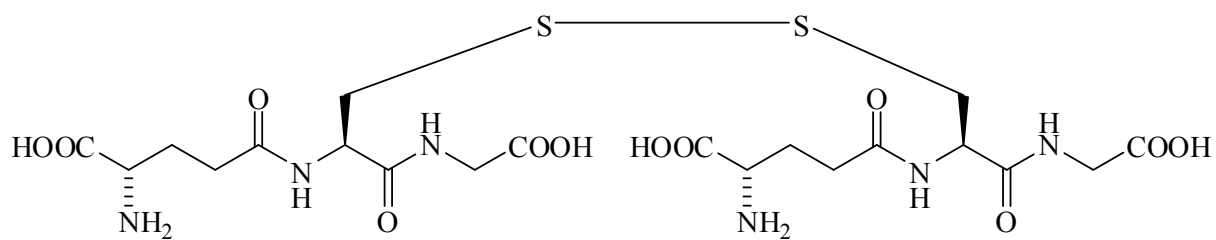
Any one of the following 4 structures.



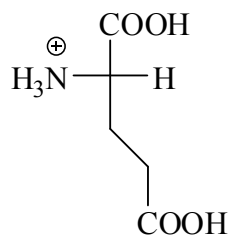
4 diastereomers

2009-J-11

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pH = 1



pH = 12

