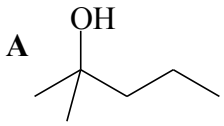
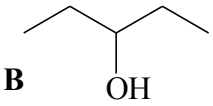
Marks 10

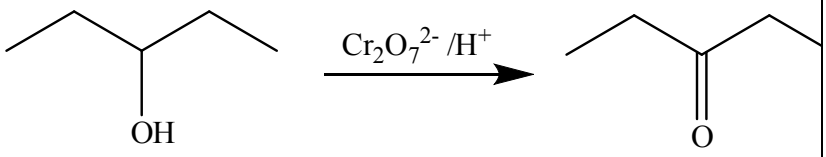
- How would you distinguish between the following pairs of molecules by means of a simple chemical test? In each case, indicate what reagent would be added and any physical change observed. Write an equation for any reaction that occurs. Specify if no reaction occurs by writing "N.R.".

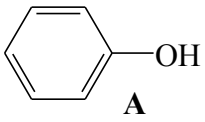


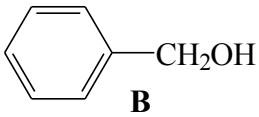


The secondary alcohol, B, will be oxidized by acidified chromate to a ketone. The tertiary alcohol, A, will not react with acidified chromate.

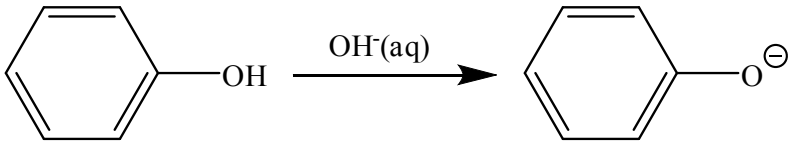
The orange chromate solution will turn green as Cr(VI) is reduced to Cr(III) in the oxidation of the secondary alcohol:

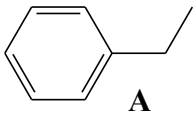


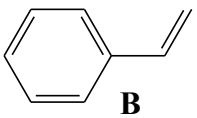




Phenol, A, will react aqueous hydroxide as it is weakly acidic. (The aromatic ring stabilizes the negative charge on the conjugate base). The alcohol, B, will not react with aqueous hydroxide as it is too weak a base.







The alkene, B, will decolourize bromine water. Br_2 will add across the double bond. A only contains an aromatic ring and this does not react in this way.