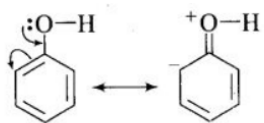


Question 55. The carbon-oxygen bond in phenol is slightly stronger than that in methanol. Why?

Solution: This can be explained as under:

(i) In phenol, the conjugation of unshared electron pairs over oxygen with aromatic ring results in partial double bond character in C – O bond.



In methanol, no such conjugation (resonance) is possible.

(ii) In phenol, oxygen is attached to sp^2 hybridised carbon while in methanol, oxygen attached to sp^3 hybridised carbon. An sp^2 hybridised carbon is more electronegative (because of greater s-character) than sp^3 hybridised carbon atom. Therefore, the bond between oxygen and sp^2 hybridised carbon is more stable than the bond between oxygen and sp^3 hybridised orbital.