THE RESONANCE THEORY
(Principal of the Theory)

1. Whenever a molecule can be represented by two or more structures that differ only in the arrangement of electrons there is resonance. The molecule is called a *hybrid* of all these structures and these structures are called contributing structures to the hybrid.

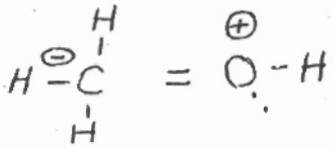
2. When the contributing structures are of about the same stability, i.e. have about the same energy content, resonance is important. The contribution of each structure to the hybrid depends upon the relative stability of that structure; the more stable structures contribute more.

3. The hybrid is more stable (i.e. contains less energy) than any contributing structures, this increase in energy (stability) is called resonance energy; the more nearly equal in stability the contributing structure, the greater the resonance energy or delocalization energy.

4. There can be resonance only between structures that contain the same number of odd electrons, i.e. there cannot be resonance between a diradical structure and a structure with all electrons paired.

5. Resonance structures exist on paper-no real existence is the major criticism of the theory.

6. All structures must be proper Lewis structures. Ex. - We should not write a structure in which C has 5 bonds.

ex. 

7. The more covalent bonds a structure has, the more stable it is.

8. Structures in which all of the atoms have a complete valence shell of electrons (noble gas structure) are especially stable and contribute more to the actual structure of the hybrid.

9. Charge separation decreases stability.

ex.