tautomerism

Isomerism of the general form:

\[ G-X-Y=Z \rightleftharpoons X=Y-Z-G \]

where the isomers (called tautomers) are readily interconvertible; the atoms connecting the groups X, Y, Z are typically any of C, H, O or S, and G is a group which becomes an electrofuge or nucleofuge during isomerization. The commonest case, when the electrofuge is \( H^+ \), is also known as 'prototropy'. Examples, written so as to illustrate the general pattern given above, include: Keto-enol tautomerism, such as:

\[
\begin{align*}
&\text{enol} \\
&\text{keto}
\end{align*}
\]

\((G = H, X = O, Y = C\text{CH}_3, Z = \text{CHCOOEt})\)

The grouping Y may itself be a three-atom (or five-atom) chain extending the conjugation, as in:

\[
\begin{align*}
&\text{enol} \\
&\text{keto}
\end{align*}
\]

\((G = H, X = \text{CHAR}, Y = N, Z = \text{CHAR}')\)

The double bond between Y and Z may be replaced by a ring, when the phenomenon is called ring-chain tautomerism, as in:

\[
\begin{align*}
&\text{enol} \\
&\text{keto}
\end{align*}
\]

\((G = H, X = O, Y = C-\text{CH=CH}, Z = N)\)
See also: ambident, sigmatropic rearrangement, tautomerization, valence tautomerization

Source:
PAC, 1994, 66, 1077 (Glossary of terms used in physical organic chemistry (IUPAC Recommendations 1994)) on page 1171