Non Coherent and Coherent Sources of Light

Non Coherent Sources: Two sources of light, whose frequencies are not same and phase difference between the waves emitted by which does not remain constant with respect to time, are defined as non coherent sources.

The light emitted by two independent sources (candles, bulbs etc.) is non-coherent and Interference phenomenon can not be produced by such two sources.

The intensity of light or position of fringes keep on changing in 10^-8 second.

Coherent Sources: The two sources of light, whose frequencies are same and the phase Different between the waves emitted by which remains constant with respect to time are defined as Coherent sources.

Remember that coherent doesn't mean in same phase, it only means having constant phase

They are obtained from the same single source.

These can be apparent or real.

Lesser light is highly coherent and monochromatic.

The distance between them is small.

Their state of polarization is the same.

These sources are of two types

- Spatial Coherent Sources
- Temporal Coherent Sources

There are two methods of obtaining these sources

Division of wave front.

Division of amplitude.

- In Young's double slit experiment two points of the same wave front are used as two coherent sources where as in Fresnel's bi-prism two virtual images of same original sources are used as two coherent sources.
- In Lloyd's one original source and its image are used as coherent sources.