

1. Crystalline solids :-

Crystalline solids are those, in which the constituent atoms or molecules are arranged in an orderly fashion throughout in a three dimension pattern

Amorphous solids :-

In Amorphous solids, the constituent atoms are not arranged in an orderly fashion, i.e the same atomic groups are arranged more randomly.

Crystalline Solids

Regular arrangement of atoms along the 3D

Have long range order

sharp melting point

They are Anisotropic

They are most stable

They have a regular cut

They show all characteristics of solids

Ex:- Diamond, NaCl, KCl, copper, Iron etc

Amorphous Solids

No regular arrangement of atoms

Have short range order

No sharp melting point

They are isotropic

They are most unstable

They have irregular cut

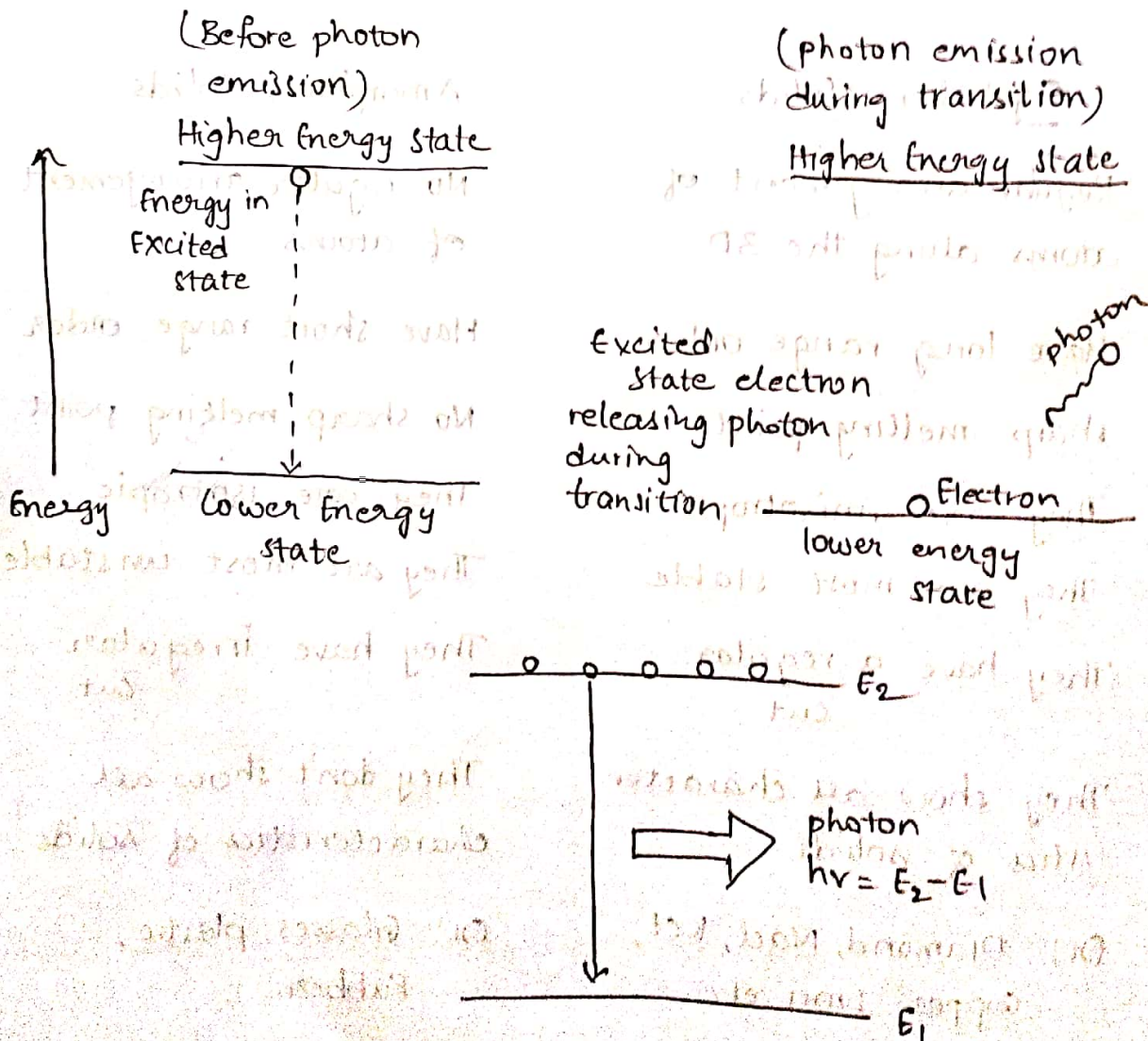
They don't show all characteristics of solids

Ex:- Glasses, plastic, Rubber

4. spontaneous emission

Spontaneous emission is an energy conversion process in which an excited electron or molecule decays to an ^{available} lower energy level and in the process gives off a photon. This process occurs naturally and does not involve interaction of other photons. The average time for decay by spontaneous emission is called spontaneous emission lifetime.

Spontaneous Emission



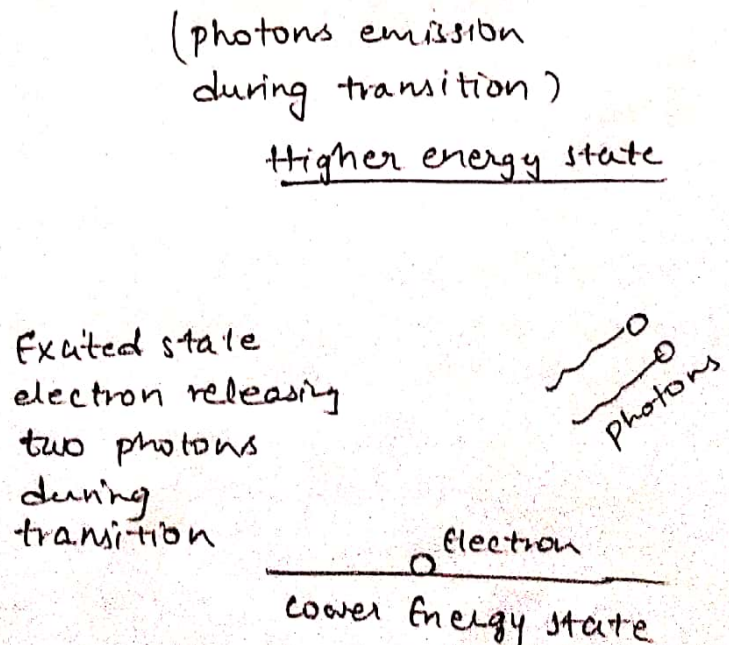
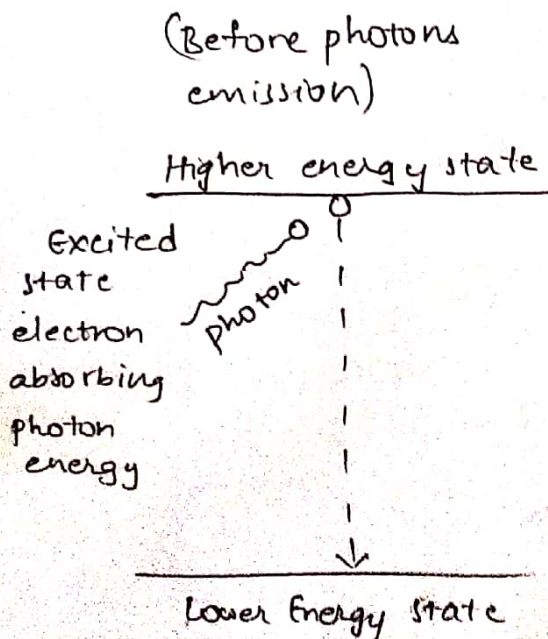
Stimulated Emission

stimulated emission is the process in which an excited electron or molecule interacts with a photon, decays to an available lower energy level and in the process give photon. As with the other processes, this process can occur in isolated atoms, ionic compounds.....

If an incoming photon, with energy equal to difference b/w allowed energy levels interacts with an electron in an excited state stimulated emission can occur.

The stimulated photon have same frequency, direction, phase, and electromagnetic polarization as the incoming photon

stimulated Emission



The stimulated photons have unique properties
In phase with incident photon
Same wavelength as incident photon
Travel in same direction as incident photon