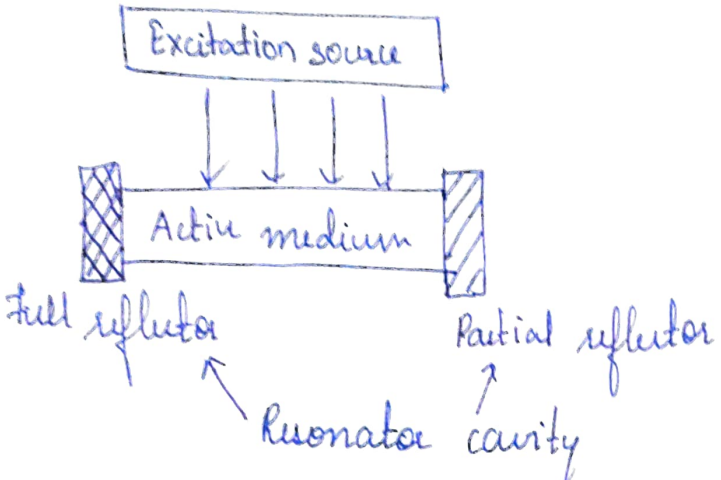
→ Requisitie of a laser system:

1) Excitation source:



It is an external energy source which gives energy to be incident on active medium.

The type of energy may be optical energy, heat energy or electrical energy.

Depending on the particular type the excitation source may be called light source, heat source or electrical energy source, which results into optical pumping, thermal pumping or electrical respectively.

2) Active medium:

It is the medium in which population inversion takes place. The atoms which are responsible for stimulation emission process due to population inversion are called active centres.

3) Laser cavity (Resonator cavity):

It is constituted by two parallel mirrors at both the ends of the active medium, one of which is full reflector and the other partial reflector, to which laser photons emerge

Laser cavity provides feedback of spontaneously emitted photons to the active medium thereby enhancing population inversion or stimulated emission.

There are standing waves set up between the photons moving in opp. directions in the active medium in order to get max. amplitude feedback, the mirrors should be adjusted in such a way that distance between them $d = \frac{m\lambda}{2}$

where m is resonator cavity mode

Power of laser beam $= \frac{E}{t} = \frac{n \cdot h\nu}{t}$

n - No. of photons / unit volume