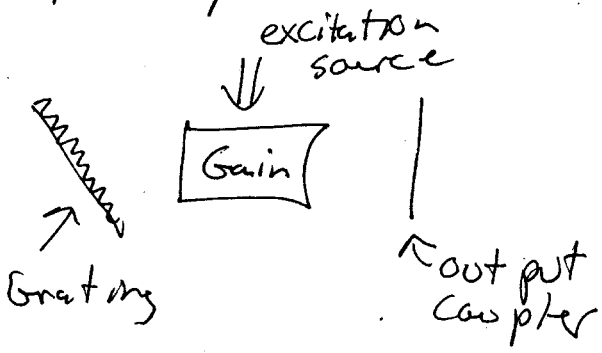
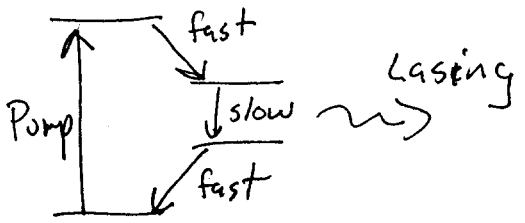
Quiz | Key

① Draw a picture of a narrowband laser. Label all the components.



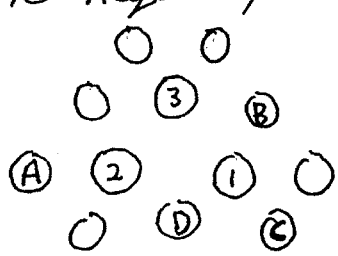
② Show how population inversion can be achieved using a 4 level system model



③ Why don't we see second harmonic generation in regular liquids?

SHG does not occur in materials that have inversion symmetry

④ Let Beam 1 be $\vec{k}_1, \omega_1$, Beam 2 be $\vec{k}_2, \omega_2$ and Beam 3 be $\vec{k}_3, \omega_3$ give the phase-matching condition for signals A, B, C, and D also give the frequency of the signals.



$k_A = 2\vec{k}_2 - \vec{k}_1$ $\quad \omega_A = 2\omega_2 - \omega_1$

$k_B = \vec{k}_1 - \vec{k}_2 + \vec{k}_3$ $\quad \omega_B = \omega_1 - \omega_2 + \omega_3$

$k_C = 2\vec{k}_1 - \vec{k}_3$ $\quad \omega_C = 2\omega_1 - \omega_3$

$k_D = \vec{k}_1 + \vec{k}_2 - \vec{k}_3$ $\quad \omega_D = \omega_1 + \omega_2 - \omega_3$

22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD