

M.Sc. semester IV

Paper: 402 (laser)

Model Question Paper

Short answer type question

1. Write down some of the important properties of laser.
2. What are metastable States?
3. What do you mean by population inversion?
4. Discuss five important uses of laser in Modern era.
5. What do you mean by Q-switching?
6. What do you mean by coherence? Explain spatial and temporal coherence.
7. Explain Doppler broadening of spectral line.

Long answer type questions

8. What do you mean by spontaneous emission stimulated emission and absorption? Establish the relation between Einstein A and B coefficient.
9. Discuss the three-level laser system. Show that there exists a minimum threshold pump power for the operation of three level laser system.
10. Deduce an expression for line shape function for in naturally broadened Radiation.
11. Give the construction and working of a ruby laser.
12. Give the construction and working of a Helium neon laser.
13. Give the ray Matrix treatment of an optical cavity and deduce the condition for its stability.
14. What do you mean by mode locking? Deduce an expression for intensity of a mode locked laser light.