

## **Department of Mechanical Engineering**

### **Faculty of Engineering, Integral University, Lucknow**

Laser Systems & Applications (IEME-014)

Assignment-02

Faculty : Shrish Bajpai

Problems : 10

Section : Unit I & II

Due Date : February 25, 2015

1. Elaborate the generation & measurement of short pulse laser.
2. Elucidate the construction & working of any type of laser which is used in the cutting process.
3. List out the features of materials used for laser action.
4. Explain the laser action in detail.
5. Show that population inversion is a condition of negative temperature.
6. Brief note on absorption and give the equation for the rate of absorption.
7. The near infrared laser is preferred for optical communication. Give the reason.
8. Why is a pulse laser generally used for material processing?
9. How can it help in achieving population inversion? Differentiate between optical pumping and electrical pumping scheme.
10. What do you understand by laser gain? Derive an expression for the loop gain.