Integral University, Lucknow

I Mid Semester Examination 2014-2015

Laser Systems & Applications (IEME-014)

Year : Second Final Year Mechanical Engineering

Maximum Marks: 30 Time : 90 Minutes

Note : Attempt any three problem. All problems carry equal marks. Make diagram & data sets where it is needed.

1. Define Compton effect & compton shift with it's associated mathematical expressions.
2. Derive Schrodinger time independent equation.
3. What are the different optical cavities. Explain it with appropriate figures & mathematical expressions
4. List down different mechanism of LASER with appropriate figures & mathematical expressions
5. (a). Calculate de-Broglie wavelength in meter for an electron of energy V electron volts.

   (b). Energy of a particle at absolute temperature T is the order kT. Calculate wavelength of thermal neutrons at 27C., given mass of the neutron = 1.67×10^{-27} KG.{h=6.6×10^{-34} Joule.sec & k =8.6×10^{-5} eV deg^{-1} }