

### **Assignment-III**

Q1. Derive electromagnetic wave equations for electric and magnetic field. Hence show that the velocity of EM wave is same as the velocity of light.

Q2. Define wave packet, phase velocity and group velocity. Derive a relation between phase velocity and group velocity in a non-dispersive medium. Show that phase velocity travels faster than light and is some time half of the particle velocity.

Q3. What is normalization condition? Construct one dimensional Schrodinger equations in steady state. Which function is considered independent of time to achieve the steady state form?