**Conduction Heat Transfer Homework Series 1**

Due Date: 90.12.22

1. A slab,, is initially at zero temperature. For times the boundary surface at is kept insulated, while the surface at is subjected to a constant heat flux. Obtain expressions for the heat flux distribution and the temperature distribution in the slab for times.

2. In a one-dimensional semi-infinite medium,, initially, the region is at a constant temperature, and everywhere outside this region is at zero temperature. For times the boundary surface at is kept at the constant temperature. Obtain an expression for the temperature distribution in the medium for times. Determine an expression for the heat flux at the surface.

3. A rectangular region is initially at a temperature. For times the boundary at is kept at temperature and all other boundary surfaces dissipate heat by convection into an environment at zero temperature. The heat transfer coefficients are the same for all of these three boundaries. Obtain an expression for the temperature distribution in the region for times.

4. Obtain an expression for the steady-state temperature distribution in an infinite strip, for the case where the boundary at is insulated, the boundary surface at *x* = 0 is kept at a temperature *f* (*y*) and the boundary at is kept at zero temperature.