

SNS College of Technology



(An Autonomous Institution)

19ASE304/ Heat Transfer

Unit -4/ Extended surfaces analysis using finite difference method

Case 3: Fin of finite length losing heat from its end by convection:

 Here, heat conducted to the tip of the fin must be equal to the heat convected away from the tip to the ambient i.e.

$$- k \cdot A_{c} \cdot \left(\frac{dT}{dx}\right)_{x=L} = h \cdot A_{c} \cdot \left(T_{L} - T_{a}\right)$$

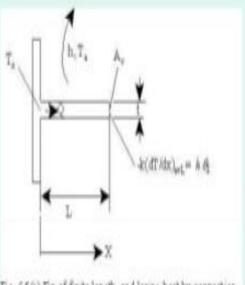


Fig. 6.5(a) Fin of finite length, end losing heat by convection.

i.e.
$$-k \cdot \left(\frac{dT}{dx}\right)_{x=L} = h \cdot \theta L$$