

Department of Mechanical Engineering  
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ME60017 Class Test 1 Autumn 2018

1. Consider a vertical fuel plate of thickness  $2L$  in a pool reactor. The plate is immersed in a coolant at temperature  $T_\infty$ . The initial temperature of the plate is  $T_\infty$ . The rate of volumetric heat generation,  $q'''$ , due to nuclear reactions in the pool reactor is constant. The heat transfer coefficient between the plate and the coolant is large.
- (a) Determine the steady state temperature distribution in the plate.
  - (b) Determine the transient temperature distribution in the plate.