

STUDENT NO.

EMAIL

ME 302: CONDUCTION AND RADIATION HEAT TRANSFER SESSIONAL

EXPERIMENT NO. 4

STUDY OF HEAT TRANSFER BY NATURAL CONVECTION FROM EXTENDED SURFACES

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OBJECTIVES

- i. To plot the temperature distribution along the fin.
- ii. To plot $(T - T_{\infty}) / (T_0 - T_{\infty})$ against x/L to show the temperature distribution along the fins in non-dimensional form for both experiment and theoretical considerations using three different boundary conditions.
- iii. To estimate the Heat Transfer under all the conditions.
- iv. To estimate fin efficiency (η_f) and fin effectiveness (η_e)

DISCUSSION

1. What type of thermocouple was used in the experiment?

2. How the performance of a fin can be improved?

3. Briefly explain the importance of determining fin efficiency and effectiveness.
4. Analyze the graphs. What were the sources of error and mention the possible ways of elimination of the errors?
5. Comment on the rate of heat transferred, fin efficiency and fin effectiveness for both the fin.