Department of Mechanical Engineering
Heat and Thermodynamics Division
Evaporative Cooling Report

Lab. Date: **Number:**

Name & Surname:

Lab. Instructor: **Group/Sub-group:** ….. / …….

Place of Lab: E1 Block – Thermodynamics Lab.
Course Topic: Evaporative Cooling
Subject: Calculation of Cooling Capacity and Efficiency of Evaporative Cooler

Experimental Procedures:

- The hose in the water reservoir is connected to the mains water.
- The device is plugged-in.
- The fuse on the control box is turned on.
- Pump and fan switch is turned on.
- Water flow rate is adjusted with valve.
- Fan velocity is adjusted with fan velocity control.
- Temperature of T_1, T_2, T_3, T_4 and mean air velocity is written on Table 1 after the system became stable.
- The experiment is repeated for various fan velocities.

Table 1. Air inlet and outlet temperature for various air velocities

Measurement	1	2	3	4
Dry-bulb Temperatures of Air Inlet (T_1) [℃]				
Wet-bulb Temperatures of Air Inlet (T_2) [℃]				
Dry-bulb Temperatures of Air Outlet (T_3) [℃]				
Wet-bulb Temperatures of Air Outlet (T_4) [℃]				
Mean air velocity (U) [m/s]				

Objective:

Calculations:

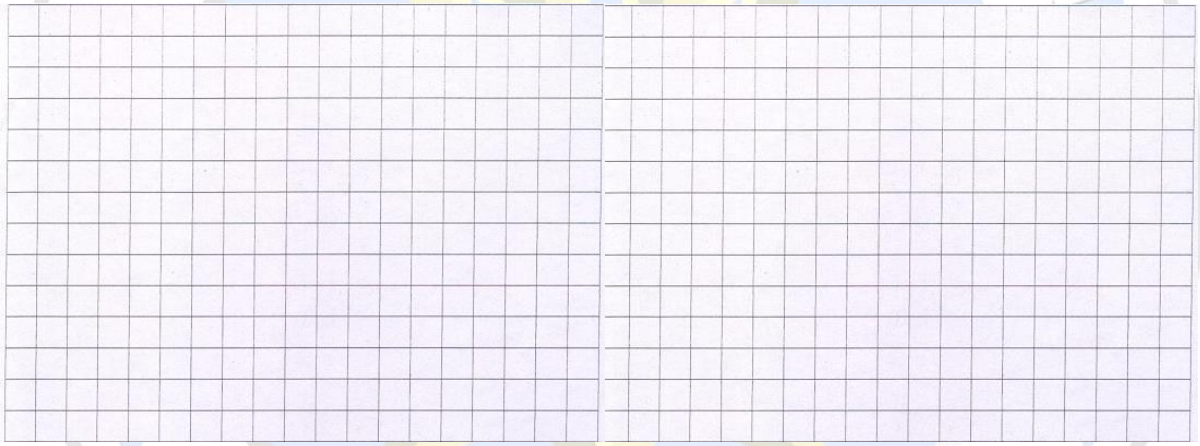

Fig. 1. Efficiency - Flow Rate Diagram

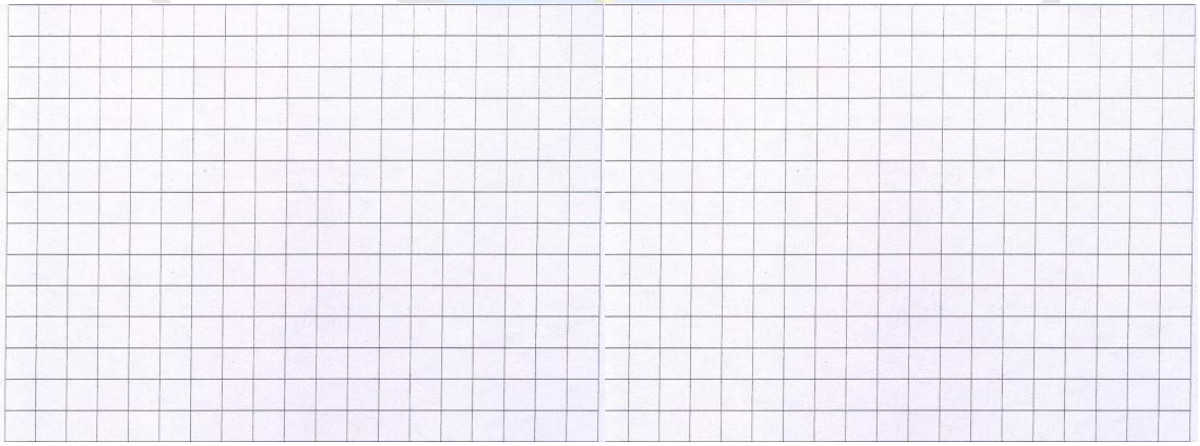

Fig. 2. Cooling Capacity - Flow Rate Diagram

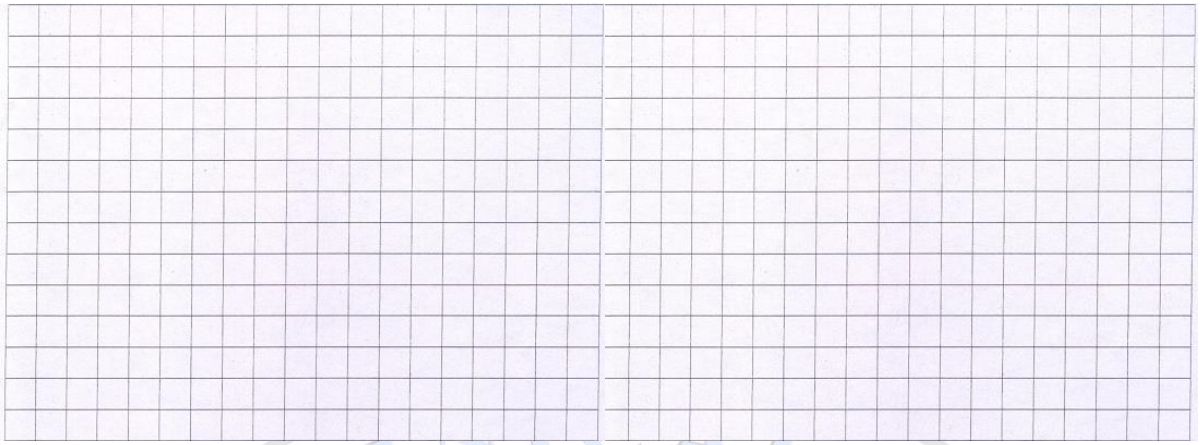

Fig. 3. Air Outlet Temperature - Flow Rate Diagram

Results and Discussion: