

EXPERIMENT 3

Objective:

To calibrate the thermocouple

Procedure:

1. Set the silicone oil bath temperature at a specified temperature greater than ambient temperature.
2. Switch on the heater of silicone oil bath.
3. Monitor the mercury thermometer reading every ten minutes till steady state is attained.
4. Note the value of e. m. f (mV) of the thermocouples T1, T2, T3, T4.
5. Repeat the procedure for silicone oil bath temperatures at different temperatures.

Precautions:

1. Make sure that the thermocouples beads are properly made.
2. Ensure that there is no any loose connection in the experimental setup.
3. Thermocouples bead, inside the silicone oil bath should not come to the contact.
4. Turn off the multimeter after taking readings in mV

Graph to be produced:

Plot $e. m. f$ (mV) vs $T - T_{amb}$ ($^{\circ}\text{C}$) for each thermocouple i.e. T1, T2, T3, T4 and obtain the corresponding best fit correlation.

Where T is the measured temperature of the bath i.e. the third column in the observation table.
Compare your calibration curve with the standard table provided by the manufacturer.

Observation Table:

S.NO.	Set temperature (°C) of the bath	Measured bath temperature (°C) by reference thermometer	T1 e. m. f (mV)	T2 e. m. f (mV)	T3 e. m. f (mV)	T4 e. m. f (mV)
1	50					
2	60					
3	70					
4	80					
5	90					