Expt. No. _____ Date 3/03/21

Page No. _____

Experiment - 5

* Aim: To verify Newton's law of cooling of difficult materials for water and draw the cooling curve.

* Apparatus: online simulator.

* Theory: • Newton's law of cooling states that the rate of temperature of the body is proportional to the different b/w the temperature of the body

Mathematical operation: $\frac{dT}{dt} = -k(T_1 - T_2)$ - (1)

$$T_1 - T_2 = Ce^{-kT} \quad - (2)$$

• Newton's Equation: $T = T_2 + (T_1 - T_2)e^{-kT}$

and observing this in form of surrounding temp and hot object temp.

$$T(t) = T_A + (T_H - T_A)e^{-kt}$$

Teacher's Signature _____

Date

pt. No. Page No.

Procedure:

The Calorie meter is filled (2/3) with the liquid given and heated to a temp. of 80°C. The heated body in the experiment is the liquid and cooling of that is being observed.

- The thermometer in insulated in to calorimeter when the temp. reaches 70°C the counting start
- observation To be taken down after every (5°C) fall in the temp.
- A graph of the above observation is to be plotted. with temp. on y-axis and time on x-axis.

* Results: The observation's are made sucessfully and geraph of every observation is plotted.

* Observation :

Time	Temperature (C)			
	Silver	Copper	Brass	Aluminium.
0	80	80	80	80
5	62.54	59.69	70.22	64.22
10	43.79	43.51	64.55	51.3
15	29.66	35.05	57.65	44.06
20	27.34	30.21	53.31	38.2
25	26.17	27.82	48.87	34.37
30	25.59	26.49	44.9	31.5
35	25.29	25.80	41.97	29.63
40	25.14	25.42	39.2	28.19
45	25.07	25.22	36.93	27.3
50	25.04	25.12	34.8	26.56
55	25.03	25.06	33.45	26.08
60	25.01	25.03	32	25.67