OBSERVATION:

Determination of Dielectric Constant of the Sample:

S.No	Temperature(°c)	Capacitance (Farad)	Dielectric Constant $[\varepsilon_r = \frac{C}{C_0}]$
1	35	2.97	1980
2	40	3.02	2013
3	45	3.08	2053
4	50	3.12	2080
5	55	3.16	2106
6	60	3.20	2133
7	65	3.25	2166
8	70	3.29	2193
9	75	3.33	2220
10	80	3.37	2240
11	85	3.14	2273
12	90	3.45	2300

OBSERVATION:

The Radius of the Sample $(r) = 10^{-2} m$

The thickness of the Sample $(d) = 1.83 \times 10^{-3} m$

CALCULATION:-

Area of plates of capacitor $(\pi r^2) = 3.14 \times 10^{-4} m^2$

Capacitance of air Capacitor,

$$C_0 = \frac{\varepsilon_0 A}{d} = 1.5 \times 10^{-3}$$

$$C_0 = \frac{\varepsilon_0 A}{d} = \frac{8.854 \times 10^{-12} \times 3.14 \times 10^{-14}}{1.83 \times 10^{-3}}$$

$C_0 = 15.1921 \times 10^{-13}$ farad $= 1.5 \times 10^{-3}$ nano farad. $\varepsilon_r = \frac{C}{C_0}$