OBSERVATIONS:

To find rise in capillary tube,

Microscopic reading without field (h_1) = 6.624 cm

$$TR = MSR + (VSC \times LC)$$

LC = 0.001 cm

S.No	Current (i)	Field (H)	Travelling microscope readings (h₂)			Difference $h = h_1 - h_2$	h/H^2 (m -1)
	Ampere	Grauss	MSR (cm)	VSC (div)	TR cm	$\times 10^{-3}$ m	
1	5	1060	6.55	2	6.65	0.028	2.50×10^{-6}
2	10	1930	6.75	20	6.77	0.176	3.90×10^{-6}
3	15	2760	6.8	5	6.805	0.181	2.40×10^{-6}
4	20	3670	6.93	22	6.972	0.348	2.60×10^{-6}
5	25	4170	7.05	1	7.651	0.427	2.50×10^{-6}
6	30	5270	7.2	3	7.203	0.379	2.10×10^{-6}

Mean h/H^2 = 2.63×10^{-6}

OBSERVATION :-

f = density of the liquid (or) Solution

$$= 1480 \ kg/m^3$$

σ = density of air = $1 \ kg/m^3$

Calculation :-

The magnetic Susceptibility of the given Solution;

$$X = \frac{2(f - \sigma)gh}{H^2}$$

$\sigma = 1 \ kg/m^3$

$f = 1480 \ kg/m^3$

$g = 9.81 \ m/s^2$

1. $2(1480-1) \times 9.81 \times 2.65 \times 10^{-6}$

$$\Rightarrow 0.076$$

2. $2(1479) \times 9.81 \times 3.90 \times 10^{-6}$

$$\Rightarrow 0.07$$

3. $2(1479) \times 9.81 \times 2.40 \times 10^{-6}$

$$\Rightarrow 0.06$$

4. $2(1479) \times 9.81 \times 2.60 \times 10^{-6}$

$$\Rightarrow 0.075$$

Mean - $18.89 \ kgm^{-1}s^{-2} gauss^{-2}$