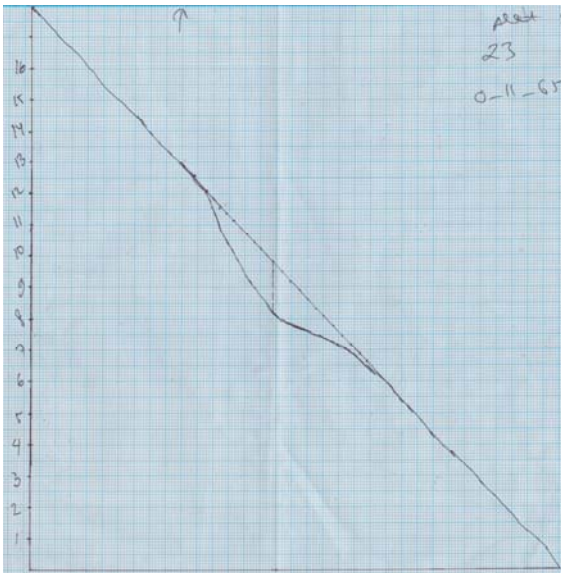


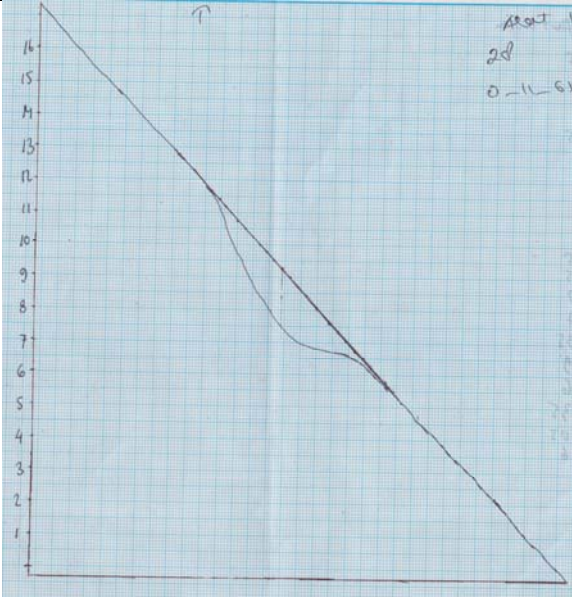
Determination of Refractive Index Gradient and Diffusion Coefficient of Salt Solution from Laser Deflection Measurement

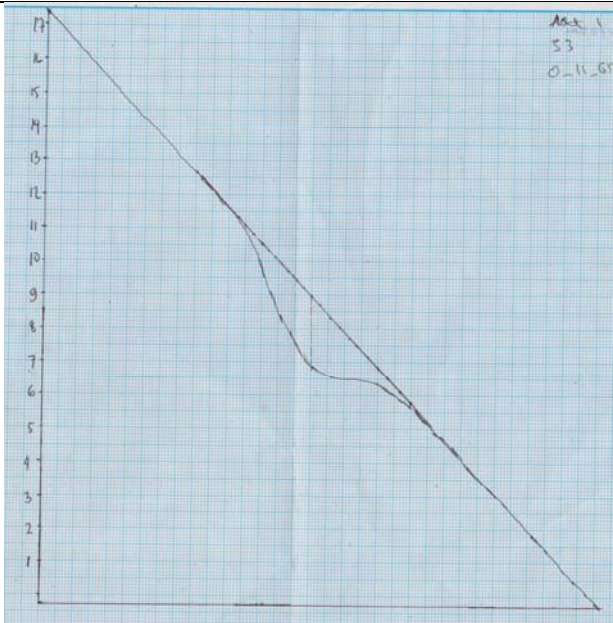
(10 points)

A. Measurement of Refractive Index Gradient of Salt Water Solution

(4.5 points)

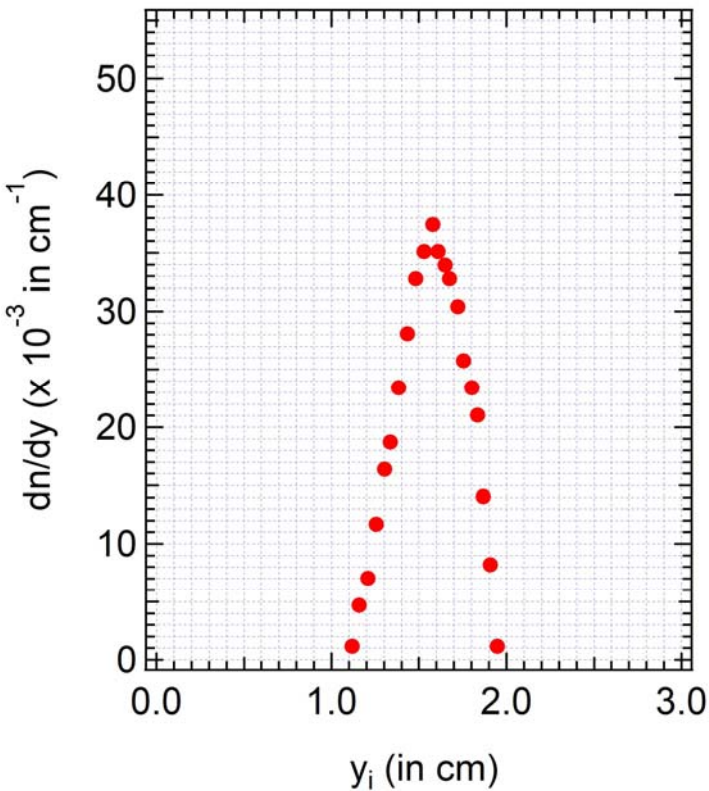
Question	Answer	Marks
A1. (1.2 pts)	 No dip No reference line Deflectogram (DL) not at the centre (+- 5mm) but the depth of dip still in 1.5 - 1.6 cm range DL at the centre, the depth of dip <1.5 cm or >1.6 cm DL not at the centre, the depth of dip <1.5 cm or >1.6 cm	Deflectogram of $C_0 = 23 \text{ g/150 mL}$ Centred Depth of dip: 1.5 - 1.6 cm (0.4 pts) -0.4 -0.05 -0.05 -0.05 -0.1
		Deflectogram

A1.	 No dip No reference line Deflectogram (DL) not at the centre (± 5 mm) but the depth of dip still in 1.7 cm - 1.9 cm range DL at the centre, the depth of dip < 1.7 cm or > 1.9 cm DL not at the centre, the depth of dip < 1.7 cm or > 1.9 cm	of $C_0 = 28 \text{ gr}/150 \text{ mL}$ Centred Deep of dip: 1.7 - 1.9 cm (0.4 pts) -0.4 -0.05 -0.05 -0.05 -0.1
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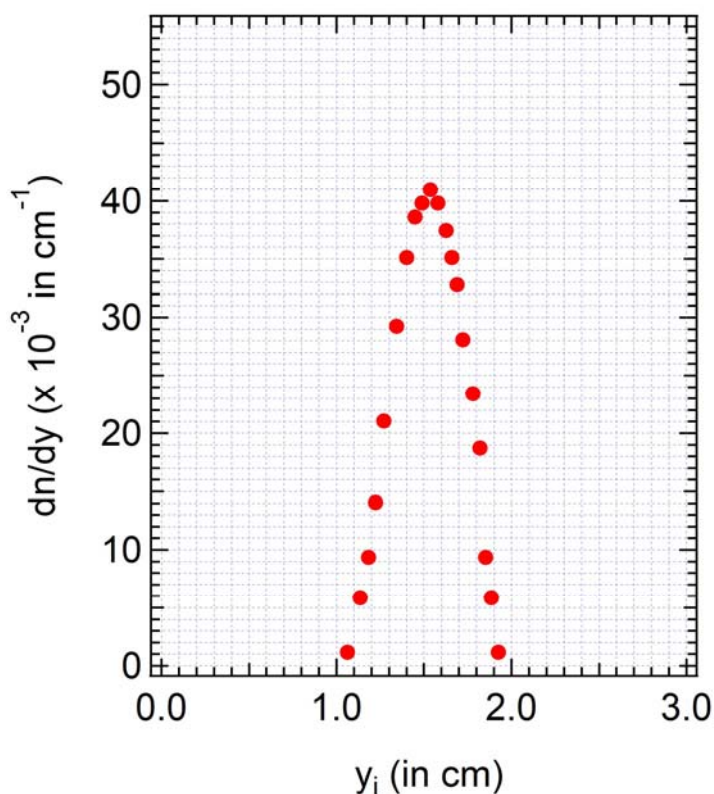
A1.		Deflectogram of $C_0 = 33 \text{ g/150 mL}$ Deep of dip: 1.9 - 2.3 cm (0.4 pts) -0.4 pts -0.05 pts - 0.05 pts - 0.05 pts -0.1																																																																																																
A2. (1.5 pts)	<table><tr><th>i</th><th>δ_i (cm)</th><th>ξ_i (cm)</th><th>Z_0 (cm)</th><th>d(cm)</th><th>Z (cm)</th></tr><tr><td>1</td><td>0.05</td><td>11.55</td><td>10.4 ± 0.1</td><td>0.8 ± 0.1</td><td>53.4 ± 0.1</td></tr><tr><td>2</td><td>0.35</td><td>11.3</td><td></td><td></td><td></td></tr><tr><td>3</td><td>0.6</td><td>11.05</td><td></td><td></td><td></td></tr><tr><td>4</td><td>0.9</td><td>10.85</td><td></td><td></td><td></td></tr><tr><td>5</td><td>1</td><td>10.65</td><td></td><td></td><td></td></tr><tr><td>6</td><td>1.1</td><td>10.35</td><td></td><td></td><td></td></tr><tr><td>7</td><td>1.3</td><td>10.15</td><td></td><td></td><td></td></tr><tr><td>8</td><td>1.4</td><td>9.85</td><td></td><td></td><td></td></tr><tr><td>9</td><td>1.45</td><td>9.7</td><td></td><td></td><td></td></tr><tr><td>10</td><td>1.5</td><td>9.45</td><td></td><td></td><td></td></tr><tr><td>11</td><td>1.6</td><td>9.25</td><td></td><td></td><td></td></tr><tr><td>12</td><td>1.5</td><td>8.95</td><td></td><td></td><td></td></tr><tr><td>13</td><td>1.4</td><td>8.65</td><td></td><td></td><td></td></tr><tr><td>14</td><td>1.2</td><td>8.35</td><td></td><td></td><td></td></tr><tr><td>15</td><td>1</td><td>8.05</td><td></td><td></td><td></td></tr></table>	i	δ_i (cm)	ξ_i (cm)	Z_0 (cm)	d (cm)	Z (cm)	1	0.05	11.55	10.4 ± 0.1	0.8 ± 0.1	53.4 ± 0.1	2	0.35	11.3				3	0.6	11.05				4	0.9	10.85				5	1	10.65				6	1.1	10.35				7	1.3	10.15				8	1.4	9.85				9	1.45	9.7				10	1.5	9.45				11	1.6	9.25				12	1.5	8.95				13	1.4	8.65				14	1.2	8.35				15	1	8.05				Table 1 of $C_0 = 23 \text{ g/150 mL}$ Optimum Z and Z_0 # data = 20 (0.5 pts)
i	δ_i (cm)	ξ_i (cm)	Z_0 (cm)	d (cm)	Z (cm)																																																																																													
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A2.	<table><tr><th>i</th><th>δ_i (cm)</th><th>ξ_i (cm)</th><th>Z_o (cm)</th><th>d(cm)</th><th>Z (cm)</th></tr><tr><td>1</td><td>0.05</td><td>11.6</td><td>10.4 ± 0.1</td><td>0.8 ± 0.1</td><td>53.4 ± 0.1</td></tr><tr><td>2</td><td>0.15</td><td>11.4</td><td></td><td></td><td></td></tr><tr><td>3</td><td>0.35</td><td>11.1</td><td></td><td></td><td></td></tr><tr><td>4</td><td>0.65</td><td>10.85</td><td></td><td></td><td></td></tr><tr><td>5</td><td>1.1</td><td>10.6</td><td></td><td></td><td></td></tr><tr><td>6</td><td>1.3</td><td>10.4</td><td></td><td></td><td></td></tr><tr><td>7</td><td>1.5</td><td>10.2</td><td></td><td></td><td></td></tr><tr><td>8</td><td>1.7</td><td>10</td><td></td><td></td><td></td></tr><tr><td>9</td><td>1.85</td><td>9.7</td><td></td><td></td><td></td></tr><tr><td>10</td><td>2</td><td>9.5</td><td></td><td></td><td></td></tr><tr><td>11</td><td>2.1</td><td>9.25</td><td></td><td></td><td></td></tr><tr><td>12</td><td>2</td><td>9</td><td></td><td></td><td></td></tr><tr><td>13</td><td>1.8</td><td>8.6</td><td></td><td></td><td></td></tr><tr><td>14</td><td>1.5</td><td>8.3</td><td></td><td></td><td></td></tr><tr><td>15</td><td>1.25</td><td>8.05</td><td></td><td></td><td></td></tr><tr><td>16</td><td>1</td><td>7.8</td><td></td><td></td><td></td></tr><tr><td>17</td><td>0.75</td><td>7.45</td><td></td><td></td><td></td></tr><tr><td>18</td><td>0.55</td><td>7.15</td><td></td><td></td><td></td></tr><tr><td>19</td><td>0.4</td><td>6.8</td><td></td><td></td><td></td></tr><tr><td>20</td><td>0.2</td><td>6.4</td><td></td><td></td><td></td></tr><tr><td>21</td><td>0.05</td><td>6.1</td><td></td><td></td><td></td></tr></table> Correct data point must be extracted from deflectogram # correct data points ≥ 20, but not all observable (Z, Z_0, d) are written Incorrect d $15 \leq \# \text{ correct data points} < 20$,	i	δ_i (cm)	ξ_i (cm)	Z_o (cm)	d (cm)	Z (cm)	1	0.05	11.6	10.4 ± 0.1	0.8 ± 0.1	53.4 ± 0.1	2	0.15	11.4				3	0.35	11.1				4	0.65	10.85				5	1.1	10.6				6	1.3	10.4				7	1.5	10.2				8	1.7	10				9	1.85	9.7				10	2	9.5				11	2.1	9.25				12	2	9				13	1.8	8.6				14	1.5	8.3				15	1.25	8.05				16	1	7.8				17	0.75	7.45				18	0.55	7.15				19	0.4	6.8				20	0.2	6.4				21	0.05	6.1				Table 1 of $C_0 = 33 \text{ g}/150 \text{ mL}$ # data point ≥ 20 (0.5 pts) -0.05 pts -0.05 pts -0.15 pts
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A3. (1.5 pts)	<table border="1"> <thead> <tr> <th>i</th><th>Y_i (cm)</th><th>dn/dY</th></tr> </thead> <tbody> <tr><td>1</td><td>1.85944</td><td>0.00117</td></tr> <tr><td>2</td><td>1.81919</td><td>0.00819</td></tr> <tr><td>3</td><td>1.77894</td><td>0.01404</td></tr> <tr><td>4</td><td>1.74674</td><td>0.02106</td></tr> <tr><td>5</td><td>1.71455</td><td>0.02340</td></tr> <tr><td>6</td><td>1.66625</td><td>0.02574</td></tr> <tr><td>7</td><td>1.63405</td><td>0.03043</td></tr> <tr><td>8</td><td>1.58575</td><td>0.03277</td></tr> <tr><td>9</td><td>1.56161</td><td>0.03394</td></tr> <tr><td>10</td><td>1.52136</td><td>0.03511</td></tr> <tr><td>11</td><td>1.48916</td><td>0.03745</td></tr> <tr><td>12</td><td>1.44086</td><td>0.03511</td></tr> <tr><td>13</td><td>1.39257</td><td>0.03277</td></tr> <tr><td>14</td><td>1.34427</td><td>0.02809</td></tr> <tr><td>15</td><td>1.29597</td><td>0.02340</td></tr> <tr><td>16</td><td>1.24767</td><td>0.01872</td></tr> <tr><td>17</td><td>1.21548</td><td>0.01638</td></tr> <tr><td>18</td><td>1.16718</td><td>0.01170</td></tr> <tr><td>19</td><td>1.11888</td><td>0.00702</td></tr> <tr><td>20</td><td>1.07058</td><td>0.00468</td></tr> <tr><td>21</td><td>1.03034</td><td>0.00117</td></tr> </tbody> </table> Jury must check the data in table # wrong data point < 3 3<# wrong data point < 6 # wrong data point > 6	i	Y _i (cm)	dn/dY	1	1.85944	0.00117	2	1.81919	0.00819	3	1.77894	0.01404	4	1.74674	0.02106	5	1.71455	0.02340	6	1.66625	0.02574	7	1.63405	0.03043	8	1.58575	0.03277	9	1.56161	0.03394	10	1.52136	0.03511	11	1.48916	0.03745	12	1.44086	0.03511	13	1.39257	0.03277	14	1.34427	0.02809	15	1.29597	0.02340	16	1.24767	0.01872	17	1.21548	0.01638	18	1.16718	0.01170	19	1.11888	0.00702	20	1.07058	0.00468	21	1.03034	0.00117	Table 2 of C₀ = 23 g/150 mL. # data = 20 (0.25 pts) - 0 - 0.05 pts - 0.25pts
i	Y _i (cm)	dn/dY																																																																		
1	1.85944	0.00117																																																																		
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A3.	 Plot dn/dY vs Y $C_0 = 23 \text{ g/150 mL}$ “Gaussian-Like” shape (0.25 pts) No x-axis label -0.01 pts No x-axis unit -0.01 pts Without x-axis unit -0.01 pts No y-axis label -0.01 pts No y-axis unit -0.01 pts Without y-axis unit -0.01 pts Ordinate axis represented in 2 digid behind point -0.05 pts Ordinate axis represented in 3 digid behind point -0 pts Random shape -0.25 pts	Plot dn/dY vs Y $C_0 = 23 \text{ g/150 mL}$ “Gaussian-Like” shape (0.25 pts) -0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.05 pts -0 pts -0.25 pts															
A3.	<table border="1" data-bbox="403 1839 791 2011"> <thead> <tr> <th>i</th><th>Y_i (cm)</th><th>dn/dY</th></tr> </thead> <tbody> <tr> <td>1</td><td>1.87554</td><td>0.00117</td></tr> <tr> <td>2</td><td>1.83529</td><td>0.00585</td></tr> <tr> <td>3</td><td>1.80309</td><td>0.00936</td></tr> <tr> <td>4</td><td>1.77089</td><td>0.01872</td></tr> </tbody> </table>	i	Y_i (cm)	dn/dY	1	1.87554	0.00117	2	1.83529	0.00585	3	1.80309	0.00936	4	1.77089	0.01872	Table 2 of $C_0 = 28 \text{ g/150 mL}$ # data = 20
i	Y_i (cm)	dn/dY															
1	1.87554	0.00117															
2	1.83529	0.00585															
3	1.80309	0.00936															
4	1.77089	0.01872															

	5	1.73065	0.02340	(0.25 pts)	
	6	1.67430	0.02809		
	7	1.64210	0.03277		
	8	1.60990	0.03511		
	9	1.57770	0.03745		
	10	1.52941	0.03979		
	11	1.48916	0.04096		
	12	1.44086	0.03979		
	13	1.40061	0.03862		
	14	1.35232	0.03511		
	15	1.29597	0.02926		
	16	1.22352	0.02106		
	17	1.17523	0.01404		
	18	1.13498	0.00936		
	19	1.08668	0.00585		
	20	1.01424	0.00117		
	Jury must check the data in table				
	# wrong data point < 3				
	3<# wrong data point < 6				
	# wrong data point > 6				
A3.				Plot dn/dY vs Y C ₀ = 28 g/150 mL. “Gaussian-Like” shape (0.25 pts)	



without x-axis label

without x-axis unit

wrong x-axis unit

without y-axis label

without y-axis unit

wrong y-axis unit

Ordinate axis represented in 2 digid behind point

Ordinate axis represented in 3 digid behind point

Random shape of the curve

-0.01 pts

-0.01 pts

-0.01 pts

-0.01 pts

-0.01 pts

-0.01 pts

-0.05 pts

-0 pts

-0.25 pts

A3.

i	Y_i (cm)	dn/dY
1	1.86749	0.00117
2	1.83529	0.00351
3	1.78699	0.00819
4	1.74674	0.01521
5	1.70650	0.02574

Table 2 of

$C_0 = 33 \text{ g/150 mL}$.

data = 20

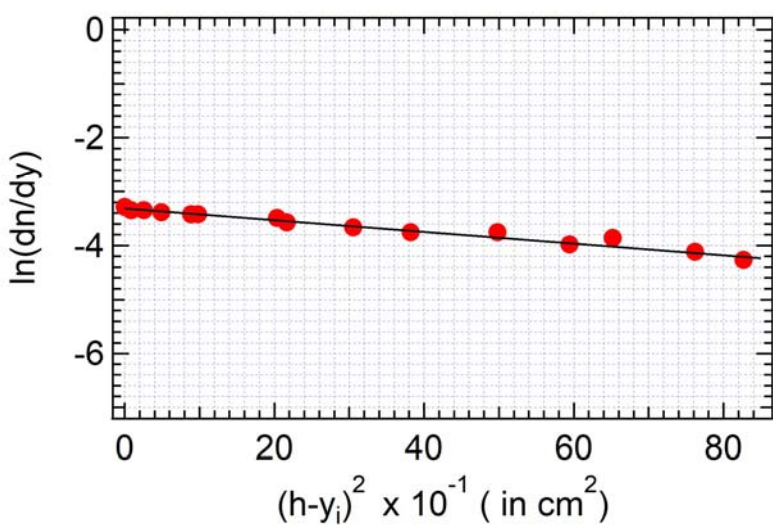
	<table> <tr><td>6</td><td>1.67430</td><td>0.03043</td></tr> <tr><td>7</td><td>1.64210</td><td>0.03511</td></tr> <tr><td>8</td><td>1.60990</td><td>0.03979</td></tr> <tr><td>9</td><td>1.56161</td><td>0.04330</td></tr> <tr><td>10</td><td>1.52941</td><td>0.04681</td></tr> <tr><td>11</td><td>1.48916</td><td>0.04915</td></tr> <tr><td>12</td><td>1.44891</td><td>0.04681</td></tr> <tr><td>13</td><td>1.38452</td><td>0.04213</td></tr> <tr><td>14</td><td>1.33622</td><td>0.03511</td></tr> <tr><td>15</td><td>1.29597</td><td>0.02926</td></tr> <tr><td>16</td><td>1.25572</td><td>0.02340</td></tr> <tr><td>17</td><td>1.19938</td><td>0.01755</td></tr> <tr><td>18</td><td>1.15108</td><td>0.01287</td></tr> <tr><td>19</td><td>1.09473</td><td>0.00936</td></tr> <tr><td>20</td><td>1.03034</td><td>0.00468</td></tr> <tr><td>21</td><td>0.98204</td><td>0.00117</td></tr> </table> Jury must check the data in table # wrong data point < 3 3 < # wrong data point < 6 # wrong data point > 6	6	1.67430	0.03043	7	1.64210	0.03511	8	1.60990	0.03979	9	1.56161	0.04330	10	1.52941	0.04681	11	1.48916	0.04915	12	1.44891	0.04681	13	1.38452	0.04213	14	1.33622	0.03511	15	1.29597	0.02926	16	1.25572	0.02340	17	1.19938	0.01755	18	1.15108	0.01287	19	1.09473	0.00936	20	1.03034	0.00468	21	0.98204	0.00117	(0.25 pts) - 0 - 0.05 pts - 0.25pts
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21	0.98204	0.00117																																																
A3.		Plot dn/dY vs Y $C_0 = 33 \text{ g/150 mL}$. (0.25 pts)																																																

	without x-axis label without x-axis unit wrong x-axis unit without y-axis label without y-axis unit wrong y-axis unit Ordinate axis represented in 2 digid behind point Ordinate axis represented in 3 digid behind point Random shape of the curve	-0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.05 pts -0 pts -0.25 pts
A4. (0.3 pts)	h for 23 g/ 150 mL = (1.5 ± 0.1) cm	0.1 pts

	h for 28 g/ 150 mL = (1.5 ± 0.1) cm	0.1 pts
	h for 33 g/ 150 mL = (1.5 ± 0.1) cm	0.1 pts
	If h is correctly determined from graph A3 for each concentration	- 0
	If h is not correctly determined from graph A3 for each concentration	-0.1

B : Determination of Diffusion Coefficient (4.2 points)

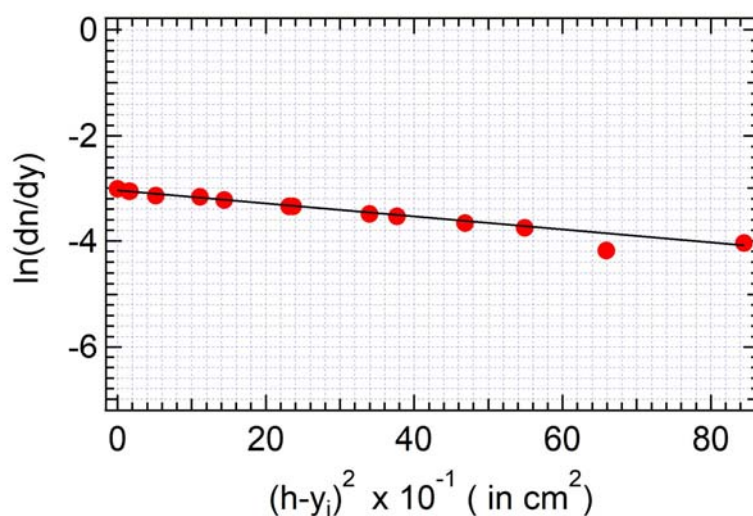
Question	Answer	Marks												
B1. (0.9 pts)	Linear form of eq.(3) $\ln\left(\frac{dn}{dY}\right) \approx m(h - Y)^2 + C \quad (b1)$ $m = -\frac{1}{4D_e t}$ Constant : $C = \ln\left(\left(\frac{dn}{dc}\right)\left(\frac{C_0}{2\sqrt{\pi D_e t}}\right)\right)$ Other than (b1)	0.9 pt -0.9 pts												
B2. (1.8 pts)	<table border="1"> <thead> <tr> <th>i</th><th>(h-yi)²</th><th>ln(dn/dy)</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.06592</td><td>-3.86003</td></tr> <tr> <td>2</td><td>0.050423</td><td>-3.75467</td></tr> <tr> <td>3</td><td>0.031065</td><td>-3.65936</td></tr> </tbody> </table>	i	(h-yi) ²	ln(dn/dy)	1	0.06592	-3.86003	2	0.050423	-3.75467	3	0.031065	-3.65936	Table 3 of $C_0 = 23$ g /150 mL.
i	(h-yi) ²	ln(dn/dy)												
1	0.06592	-3.86003												
2	0.050423	-3.75467												
3	0.031065	-3.65936												

	<table> <tr><td>4</td><td>0.020752</td><td>-3.4923</td></tr> <tr><td>5</td><td>0.00917</td><td>-3.41819</td></tr> <tr><td>6</td><td>0.005128</td><td>-3.3831</td></tr> <tr><td>7</td><td>0.000984</td><td>-3.3492</td></tr> <tr><td>8</td><td>6.99E-07</td><td>-3.28466</td></tr> <tr><td>9</td><td>0.002414</td><td>-3.3492</td></tr> <tr><td>10</td><td>0.009493</td><td>-3.41819</td></tr> <tr><td>11</td><td>0.021237</td><td>-3.57235</td></tr> <tr><td>12</td><td>0.037646</td><td>-3.75467</td></tr> <tr><td>13</td><td>0.05872</td><td>-3.97781</td></tr> </table> Jury must check the data in table # of data point > 10 3 <= # of data point < 10 # of data point < 3 # wrong data point < 3 3 < # wrong data point < 6 # wrong data point > 6	4	0.020752	-3.4923	5	0.00917	-3.41819	6	0.005128	-3.3831	7	0.000984	-3.3492	8	6.99E-07	-3.28466	9	0.002414	-3.3492	10	0.009493	-3.41819	11	0.021237	-3.57235	12	0.037646	-3.75467	13	0.05872	-3.97781	# data = 10 (0.3 pts) -0 pts -0.05 pts -0.3 pts - 0 - 0.05 pts - 0.25 pts
4	0.020752	-3.4923																														
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13	0.05872	-3.97781																														
B2	 Using linear regression of eq. (B1.1), we obtain m (slope) = -10 cm^{-2} till -8.8 cm^{-2}	Plot of Table 3 $C_0 = 23 \text{ g/150 mL}$ # data = 10 (0.3pts)																														

	without x-axis label without x-axis unit wrong x-axis unit without y-axis label without y-axis unit wrong y-axis unit # of data point in linear range > 10 3 ≤ # of data point in linear range < 10 # of data point in linear range < 3 or random shape of curve m is out of range	-0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.01 pts -0.01 pts - 0 - 0.05 pts - 0.25 pts -0.3 pts																																										
B2.	<table border="1"> <thead> <tr> <th>i</th><th>(h-y_i)²</th><th>ln(dn/dy)</th></tr> </thead> <tbody> <tr><td>1</td><td>0.057912</td><td>-3.75467</td></tr> <tr><td>2</td><td>0.033968</td><td>-3.57235</td></tr> <tr><td>3</td><td>0.023136</td><td>-3.41819</td></tr> <tr><td>4</td><td>0.014378</td><td>-3.3492</td></tr> <tr><td>5</td><td>0.007693</td><td>-3.28466</td></tr> <tr><td>6</td><td>0.001553</td><td>-3.22404</td></tr> <tr><td>7</td><td>6.99E-07</td><td>-3.19505</td></tr> <tr><td>8</td><td>0.002414</td><td>-3.22404</td></tr> <tr><td>9</td><td>0.007989</td><td>-3.25389</td></tr> <tr><td>10</td><td>0.018955</td><td>-3.3492</td></tr> <tr><td>11</td><td>0.037646</td><td>-3.53152</td></tr> <tr><td>12</td><td>0.071007</td><td>-3.86003</td></tr> <tr><td>13</td><td>0.099079</td><td>-4.26549</td></tr> </tbody> </table> Jury must check the data in table	i	(h-y _i) ²	ln(dn/dy)	1	0.057912	-3.75467	2	0.033968	-3.57235	3	0.023136	-3.41819	4	0.014378	-3.3492	5	0.007693	-3.28466	6	0.001553	-3.22404	7	6.99E-07	-3.19505	8	0.002414	-3.22404	9	0.007989	-3.25389	10	0.018955	-3.3492	11	0.037646	-3.53152	12	0.071007	-3.86003	13	0.099079	-4.26549	Table 3 of C₀ = 28 g /150 mL # data = 10 (0.3 pts)
i	(h-y _i) ²	ln(dn/dy)																																										
1	0.057912	-3.75467																																										
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[illegible]

	# of data point in linear range > 10 3 ≤ # of data point in linear range < 10 # of data point in linear range < 3 or random shape of curve m is out of range	-0.05 pts -0.3 pts -0.3 pts																																										
B2.	<table border="1"> <thead> <tr> <th>i</th><th>(h-y_i)²</th><th>ln(dn/dy)</th></tr> </thead> <tbody> <tr><td>1</td><td>0.046873</td><td>-3.65936</td></tr> <tr><td>2</td><td>0.033968</td><td>-3.4923</td></tr> <tr><td>3</td><td>0.023136</td><td>-3.3492</td></tr> <tr><td>4</td><td>0.014378</td><td>-3.22404</td></tr> <tr><td>5</td><td>0.005128</td><td>-3.13948</td></tr> <tr><td>6</td><td>0.001553</td><td>-3.06152</td></tr> <tr><td>7</td><td>6.99E-07</td><td>-3.01273</td></tr> <tr><td>8</td><td>0.001688</td><td>-3.06152</td></tr> <tr><td>9</td><td>0.011126</td><td>-3.16688</td></tr> <tr><td>10</td><td>0.023647</td><td>-3.3492</td></tr> <tr><td>11</td><td>0.037646</td><td>-3.53152</td></tr> <tr><td>12</td><td>0.054884</td><td>-3.75467</td></tr> <tr><td>13</td><td>0.08446</td><td>-4.04235</td></tr> </tbody> </table> Jury must check the data in table # of data point > 10 3 ≤ # of data point < 10 # of data point < 3 # wrong data point < 3 3 < # wrong data point < 6 # wrong data point > 6	i	(h-y _i) ²	ln(dn/dy)	1	0.046873	-3.65936	2	0.033968	-3.4923	3	0.023136	-3.3492	4	0.014378	-3.22404	5	0.005128	-3.13948	6	0.001553	-3.06152	7	6.99E-07	-3.01273	8	0.001688	-3.06152	9	0.011126	-3.16688	10	0.023647	-3.3492	11	0.037646	-3.53152	12	0.054884	-3.75467	13	0.08446	-4.04235	Table 3 of C₀ = 33 g /150 mL # data = 10 (0.3 pts) -0 pts -0.05 pts -0.3 pts - 0 - 0.05 pts - 0.25
i	(h-y _i) ²	ln(dn/dy)																																										
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B2.		Plot of Table 3 C₀ = 33 g/150 mL																																										



data =
10

(0.3pts)

-0.01 pts

-0.01 pts

-0.01 pts

-0.01 pts

-0.01 pts

-0.01 pts

-0.3 pts

-0 pts

-0.05 pts

-0.3

Using linear regression of eq. (B1.1), we obtain

m (slope) = -11.3 cm^{-2} till -12.8 cm^{-2}

without x-axis label

without x-axis unit

wrong x-axis unit

without y-axis label

without y-axis unit

wrong y-axis unit

m is out of range

of data point in linear range > 10

$3 \leq \#$ of data point in linear range < 10

of data point in linear range < 3 or random shape of curve

B3

(1.5 pts)

D of 23 g/ 150 mL = $(1.38 \text{ till } 1.58) \times 10^{-5} \text{ cm}^2/\text{s}$

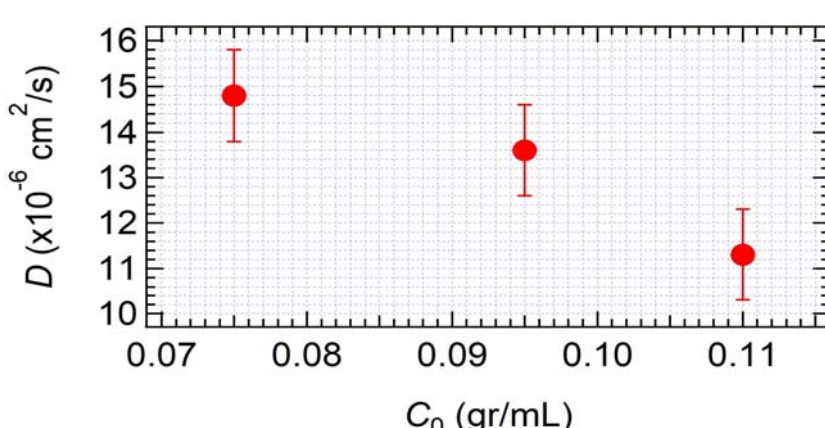
0.5 pts

D of 28 g/ 150 mL = $(1.26 \text{ till } 1.46) \times 10^{-5} \text{ cm}^2/\text{s}$

0.5 pts

	D of 33 g/ 150 mL = $(1.03 \text{ till } 1.23) \times 10^{-5} \text{ cm}^2/\text{s}$ D is out of range for each concentration	0.5 pts- -0.5 pts
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C. Nonlinear diffusion (1.3 points)

Question	Answer	Marks
C1. (1.3 pts)	 Without error bars Value of C not stated in $C_0/2$	Plot D vs. C_0 0.8 pts -0 -0.4 pts
C1.	$\frac{d}{dc}D = -4.2 \times 10^{-5} \text{ cm}^2 \text{ mL } g^{-1} s^{-1} \text{ till } -15.8 \times 10^{-5} \text{ cm}^2 \text{ mL } g^{-1} s^{-1}$ Without or wrong unit Out of range	0.5 pts -0.01 pts -0.5 pts



E1. Marking Scheme & Solution

Student Code

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Experimental
Question

1

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