CH1102 Lab Report-1

Determination of density of a substance: Understanding of Precision and Error Analysis

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	10-mL Graduated Volumetric Cylinder	10-mL Volumetric Pipette	50-mL Burette	50-mL Beaker
Mass of empty dry 50-mL Beaker(g)	33.80	33.69	33.69	33.63
Mass of 50-mL Beaker + Water (g)	43.59, 43.6 , 43.58	43.56, 43.55, 43.57	43.81, 43.82, 43.83	41.53, 41.54, 41.52
Mass of water only(g)	9.79, 9.8, 9.78	9.87, 9.86, 9.88	10.12, 10.13, 10.14	7.85, 7.86, 7.89
Actual Volume of Water used (mL)	10, 10, 10	10, 10, 10	10, 10, 10	10, 10, 10
Density of water(g/mL)	1	1	1	1
Temperature ($^{\circ}C$)	25	25	25	25

Table 1: Experimental Data Part A

No. of measurements	10-mL Graduated Volumetric Cylinder	10-mL Volumetric Pipette	50-mL Burette	50-mL Beaker
1	0.979	0.987	1.012	0.785
2	0.980	0.986	1.013	0.786
3	0.978	0.988	1.014	0.789
4				
5				

Table 2: Density Values (in g/mL) in Part A

	Average	Error Percentage
Graduated Volumetric Cylinder	0.979	2.1
Volumetric Pipette	0.987	1.3
Burette	1.013	1.3
Beaker	$0.78\dot{6}$	21.3

Table 3: Data Analysis Part A

Unknown	Trial 1	Trial 2	Trial 3
Mass of unknown(g)	15.02	15.01	15.03
Volume of Water(mL)	40	40	40
Volume of Water + Sample(mL)	47	47.1	47
Volume of Sample(mL)	7.0	7.1	7.0
Density of Sample(g/mL)	2.146	2.114	2.147
Average Density of Sample(g/mL)	2.146	2.114	2.147

Table 4: Density of unknown material

Sample Identity	Trial 1
Physical Appearance	Uneven Cylinder
Literature Value - Density of Material	2.7
Relative range	
Percentage Error	20.9 %

Table 5: Required for those objects whose densities are available in Literature