Date. 29th July 2019

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Aim - Quality check for soft drinks

Apparatus - Travelling microscope, transparent liquid (water), reading lens, glass beaker, pin, saw dust.

SLO -

- To determine the refractive index of the given transparent liquid using travelling microscope
- To determine the refractive index of unknown liquid.

Formula -

Refractive index of liquid,

$$\mu = \frac{\text{real depth of liquid}}{\text{apparent depth of liquid}} = \frac{C-A}{C-B} \quad \text{(no unit)}$$

A - microscopic reading when tip of the pin is focused directly

B - microscopic reading when tip of the pin is focused through the liquid.

C - microscopic reading when saw dust is sprinkled on the surface of the liquid is focused

Result:

Refractive index of the given liquid (water) is found to be 1.366

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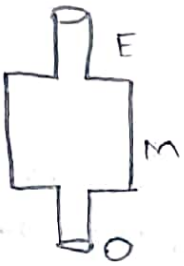

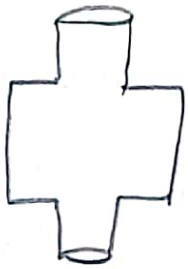

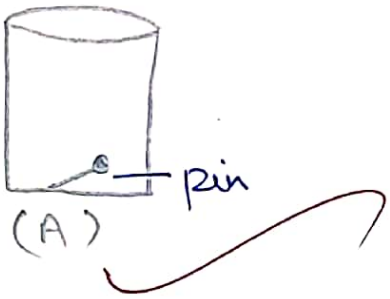

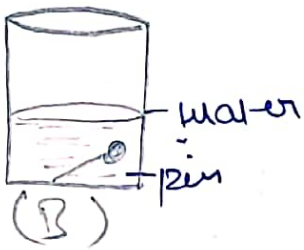

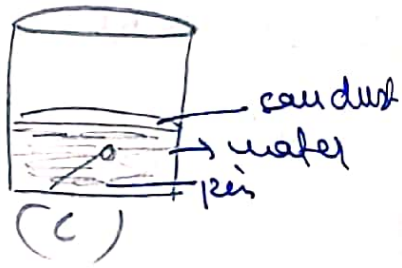

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Vol. of water in beaker	Clear image of tip of pin (cm) (reading A)			Clear image of tip of pin (cm) (reading B)			Clear image of tip of pin (cm) (reading C)			C−A (cm)	C−B (cm)	M
	MSR	VSR	OR	MSR	VSR	OR	MSR	VSR	OR			
40 ml	6.15	0.005	~~6.155~~ 6.155	7.95	0.005	~~7.955~~	8.5	0.001	8.501	1.7	2.355	~~1.395~~
60 ml	6.15	0.005	6.155	~~7.95~~ 8.1	0.047	8.147	8.8	0.045	8.845	1.997	2.69	~~2.4~~ 1.347

Mean = $\frac{1.347 + 1.385}{2} = \frac{2.732}{2} = 1.366$

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Least count of travelling microscope = 0.001

Calculations –

$M_1 = \frac{C-B}{C-A} = \frac{2.355}{1.7} = 1.385$

$M_2 = \frac{C-B}{C-A} = \frac{2.69}{1.997} = 1.347$

$M = \frac{M_1+M_2}{2} = \frac{1.385+1.347}{2} = \frac{2.732}{2} = 1.366$

Result – Refractive index of the given liquid (water) is found to be 1.366

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