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Expt. No. 5. Quality check for Soft Drinks Page No. .....

Required Apparatus

- Travelling microscope
- Transparent liquid (water)
- Reading lens
- Glass beaker
- Pin
- Saw dust

Slo:-

- To determine the refractive index of ~~the prism~~ given liquid using travelling microscope
- To determine the refractive index of impure liquid

Formula:-

The refractive index of liquid (μ)

$$\mu = \frac{\text{Real depth of liquid}}{\text{Apparent depth of liquid}} = \frac{C-A}{C-B}$$

A → microscopic reading when tip of pin is focussed directly

B → microscopic reading when tip of pin is focussed through the liquid

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

Result :- Refractive index of given liquid (water) is found to be

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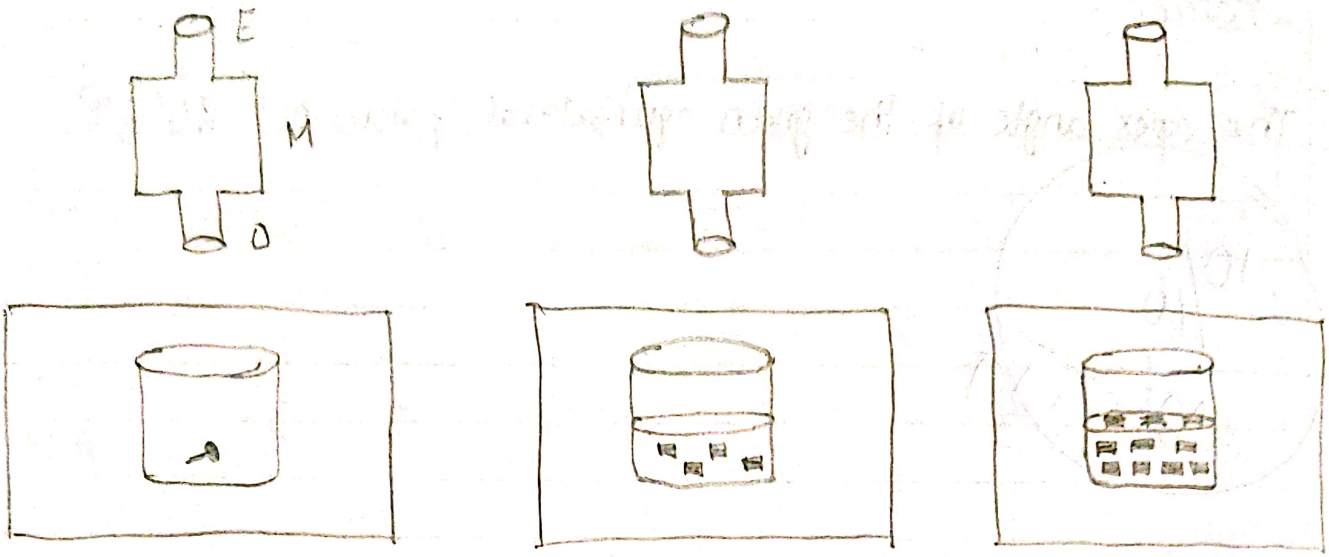

Least count of Travelling Microscope = 0.001 cm

Volume of water in the beaker	Clear image of tip of the pin (Reading A)			Clear image of tip of the pin seen through the liquid (Reading B)			Clear image of the saw dust scattered on the surface of liquid (Reading C)			C-A	C-B	C-A / C-B
	MSR (cm)	VSR (cm)	OR (cm)	MSR (cm)	VSR (cm)	OR (cm)	MSR (cm)	VSR (cm)	OR (cm)			
40mL	5.8	0.01	5.81	6.4	0.05	6.405	7.9	0.03	7.93	2.12	1.525	1.39
60mL	5.8	0.01	5.81	6.7	0.011	6.711	9.2	0.034	9.234	3.424	2.523	1.357
	VSR = VSC × LC			observed reading (OR) = MSR + VSR							Mean →	1.374

Date .....

Expt. No. .....

Page No. .....

Calculation :-

$$\mu_{40\,mL} = \frac{C-A}{C-B} = \frac{7.93-5.81}{7.93-6.405} = \frac{2.12}{1.525} = 1.39$$

$$\mu_{60\,mL} = \frac{C-A}{C-B} = \frac{9.234-5.81}{9.234-6.711} = \frac{3.424}{2.523} = 1.357$$

$$\text{Mean} = \frac{\mu_{40mL} + \mu_{60mL}}{2}$$

$$= \frac{1.39 + 1.357}{2}$$

$$= \frac{2.747}{2}$$

$$= 1.37$$

Result :-

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

$\mu = 1.37$.

10

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