Report on Laboratory Experiment No 1
Measurement of Refraction Index of Liquids by Means of Refractometer

The student:
Group _____
First name_____
Last name_____
is **allowed** to do the laboratory work.

_____ _____
Date Signature of the teacher

Purpose of work

Study principle of function of refractometer. Find the refractive index of different liquids relative to air and refractive index of sugar solution as function of sugar concentration.

Theoretical principals of work

1. The law of light refraction is _____
_____
_____

2. Refractive index of substances indicate that _____
_____
_____
n = _____, where c - _____; υ - _____;

3. Refractive index of solution n depends on solution concentration x (at not great values of x < 30%) by follow way:

n_0 - _____; k - _____

4. The phenomenon of _____
_____
_____
_____is the base of method of limit angle.

5. The limit angle is _____
_____
_____
_____
_____

6. March of the rays in refractometer:

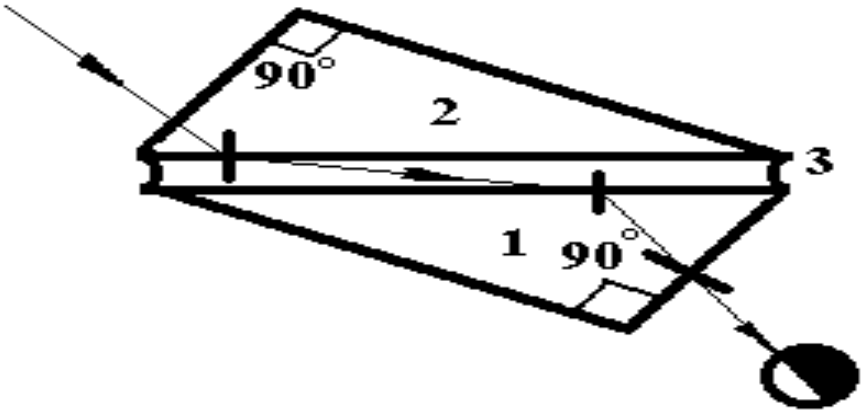


Fig. 1 March of the rays in refractometer

7. Limit of refractive index measured by refractometer magnitude is defined by the condition: _____
_____

Results of the measurements

1. Measurements of refractive index of different liquids:

Table 1

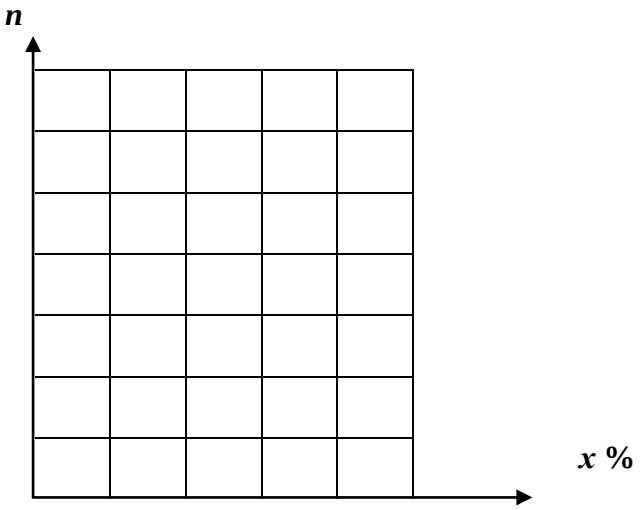
Investigated liquid	n_1	n_2	n_3	Average n
1. Water				
2. Spirit				
3. Toluol				
4.				

2. Measurements of refractive index of sugar solution as function of its concentrationa.

Table 2

Concentration of the solution	n_1	n_2	n_3	Average n
10%				
15 %				
20 %				

3. Dependence of refractive index *n* as function of concentration of sugar in solution ***x***



Calculations of the increment (*k*) of refractive index

From diagram find the increment (*k*) of refractive index as tangent of slope angle of the curve *n*(*x*).

$$k = tg\ \gamma = \frac{\qquad}{\qquad}$$

Functional dependence ***n*(*x*)** has the form: _____
_____
_____
_____

Resume.

_____
_____
_____
_____
_____
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_____
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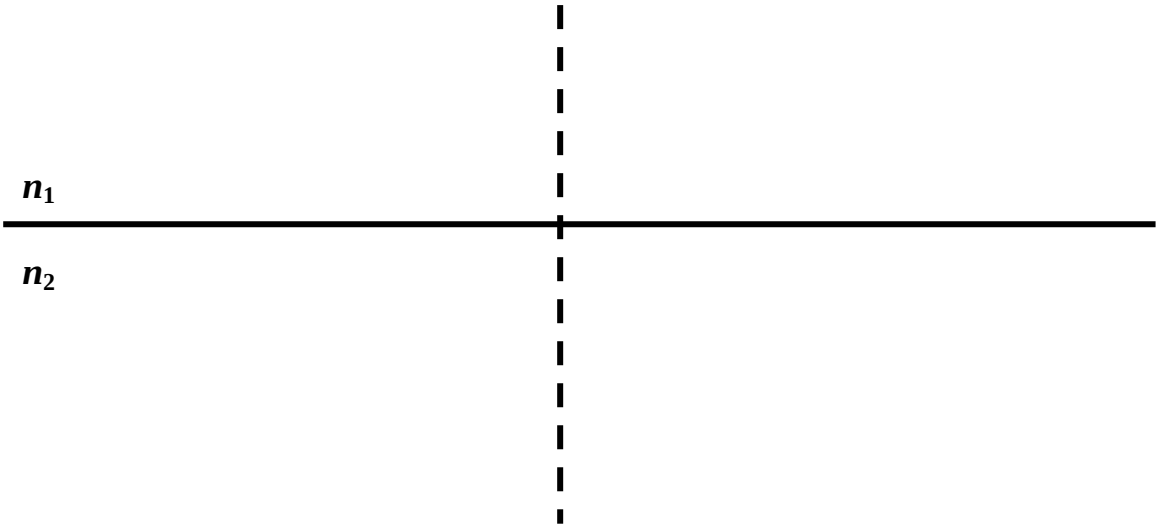
_____

Test questions.

1. What devices are called the refractometers? What is r
2. What is the design of refractometer used for measuring refractive index of liquids? What is the accuracy of the experiment?

3. What is called the relative refraction index? What's called the absolute refraction index?
4. Explain the method of limit angle. Why the surface of the upper prism is matted?
5. What is the phenomenon of the "total internal reflection"? Draw the march of rays for the case of the limit angle if $n_2 > n_1$.



Answers.

Realized by the student:
Group _____
First name_____
Last name_____
Approved by the teacher:

_____ _____
Date Signature of the teacher