## Questions from the "PAL Prüfungsbuch" Separating and cleaning up substances, basic laboratory techniques

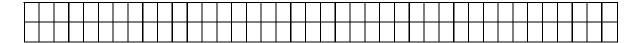
### All tasks are to be scored with 10 to 0 points

# U51: With the pictured apparatus fat is to be extracted from food 1) Name the technical term for this apparatus 2) Indicate the position where - the material to be extracted is located - the extraction solvent is located - the solvent condenses 3) Name a method by which the fat can be isolated from the extraction solution



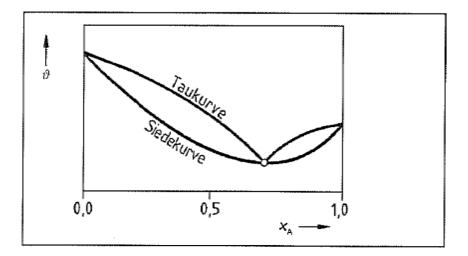


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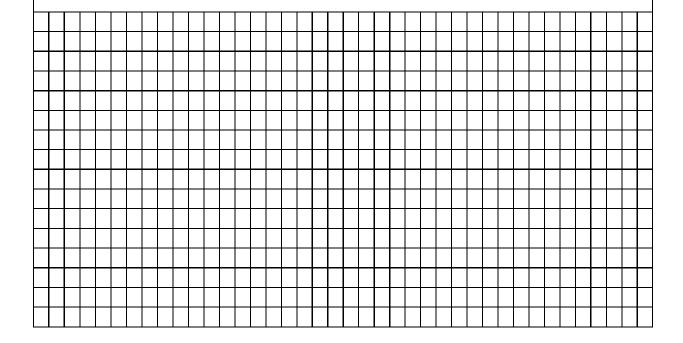


#### U54:

The picture shows an isobaric boiling diagram of an azeotropic mixture

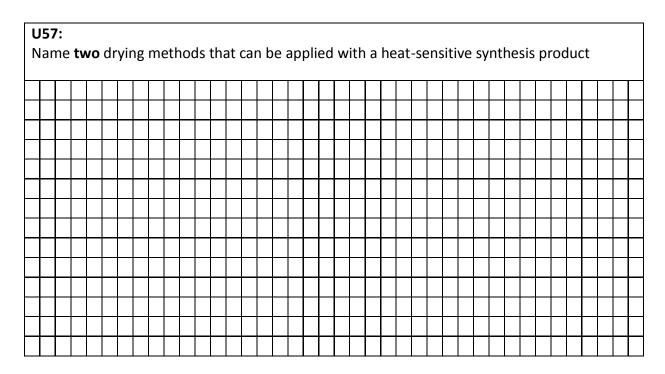


- 1) Explain the term "azeotropic"
- 2) Describe the composition of the mixture  $x_A = 0.3$  if it is distilled an "infinite number of times"



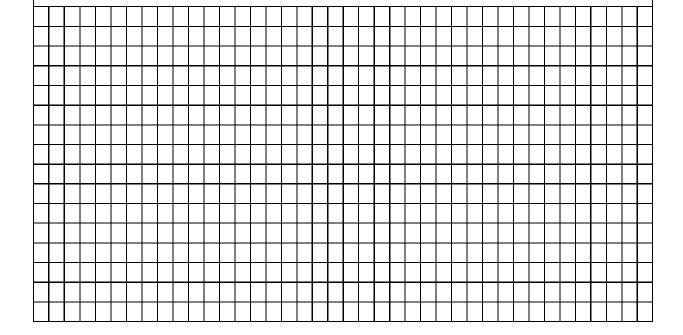


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#### U59:

- 1) Name the components of an apparatus that is used for fractionated vacuum distillation
- 2) Name the part of the vacuum distillation apparatus that prevents delay in boiling
- 3) Describe which characteristic a mixture must have that it is advisable to make use of vacuum distillation





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#### U61:

Choose an appropriate distillation method to isolate the given component from the following mixtures.

Available are: simple distillation, steam distillation, (fractionated) vacuum distillation, fractionated (normal pressure) distillation.

Justify your decision!

	Component/ mixture Ethanol, w > 90% from a	Distillation method	Justification
1	Ethanol, w > 90% from a ethanol-water mixture with metal impurities		
2	Nonanol from a nonanol-decanol mixture 1:1		
3	Acetone from an acetone- heptanol mixture		
4	Essential oil from lemon peels		



