**Lecture 1 – Introduction, types of textile measurements**

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| Basic textile unit is fineness (linear density) T [tex]. Its size is [g/km].  What size has the unit in basic SI units [kg/m]? |
| a) dtex  b) ktex  c) Mtex |

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| Convert derived SI units to basic SI units:  Example: [Pa] = [kg.m-1.s-2] |
| a) Energy E [J]  b) Power P [W]  c) Force F [N]  d) Dynamic viscosity η [Pa.s]  e) Specific strength Fp [N/tex]  f) Voltage U [V] |

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| Define internal material properties? |
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| Define product properties? |
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**Lecture 2 – Sensors, data processing, analysis, data presentation**

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| What is the use of following parts of measuring system: |
| a) Sensor  b) Converter  c) Receiver |

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| Calculate parameters below for given data (diameter of PES fibers in μm): | |
| a) Mean  b) Modus  c) Median  d) Variance  e) Standard deviation  f) Coefficient of variation | Using lanameter we obtained following parameters  of PES fibres diameter in μm:  20,1; 22,8; 19,6; 18,9; 20,1; 23,2; 20,6; 21,2; 21,0; 20,6; |

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| What will be the correct interpretation of results from paremeters below? | |
| s2 = 1,686445071 | a) 6,549 ± 1,53501 dtex  b) 6,55 ± 1,298632 dtex  c) 6,5 ± 1,2 dtex  Convert the results into [tex] units |

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| Draw the histogram for data set below (length of fibers): |
| |  |  |  |  |  | | --- | --- | --- | --- | --- | | j | ljd - ljh [mm] | lj [mm] | nj | fj | | 1 | 5-15 | 10 | 10 |  | | 2 | 15-25 | 20 | 13 |  | | 3 | 25-35 | 30 | 20 |  | | 4 | 35-45 | 40 | 27 |  | | 5 | 45-55 | 50 | 30 |  |   **n = Σnj = 100 !** |

**Lecture 3 – Sampling, nuber of measurements**

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| Explain the term "random selection": |
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| What is the method of fiber selection from woven fabric according to ISO Standards? |
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| How we estimate number of measurements? |
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| How we estimate climatic conditions for measurement?  What are normal laboratory conditions? |
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| Why we pre-dry and condition textile specimen? |
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**Lecture 4 – Moisture sorption**

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| Define term "Fiber sorption properties". What does mean hydrophobic a hydrophilic? |
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| What does mean "Commercial moisture regain", why we need to define it? |
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| How we estimate moisture content in fibers? |
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| How is defined relative air humidity? What is dew point, how is linked to temperature? |
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**Lecture 5 – Geometry of fibers**

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| Derive relation between fineness and diameter of circular fibers. Describe quantities and units used for calculation: |
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| How is defined fiber length? Describe the method for measurement of lengthes of fibers embedded in staple yarn? |
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| How You estimate Specific surface of fibers **Sp [m2/kg]** for circular fiber with fineness  T = 3, 6, and 9 dtex? |
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| How is defined equivalent fiber diameter? Can You use it for description of shape of fiber cross-section? |
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