DEPARTMENT OF TEXTILE TECHNOLOGY

MAJOR TEST

TTL 731 : THEORY OF FABRIC STRUCTURE

Max. Marks: 50

1) Show that fabric extension in bias direction is larger than that of principal direction. (5)

2) Compare load-elongation behavior of woven, weft knitted and needle punched non-woven fabrics with the help of their structural parameters. (5)

3) What should be the ratio of ends to picks per cm if the % crimp in warp & weft is to be 15 & 5 and warp & weft tex 15 & 20 respectively. (5)

4) For a fabrie following is given :

$C_1 = 38\%$, $C_2 = 5\%$, $p_2/D = 0.98$, $p_1/D = 1.6$

i. Can weft be pulled straight ?
ii. Find the new crimp, change of thickness , Poisson's ratio and %age change in ends & picks per cm. (10)

5) What are the factors that influence fabric roughness? Derive a relationship to determine geometrical roughness of a woven fabric. (5)

6)

a) What purposes are served by crimp interchange and crimp balance equations.
b) What makes shear rigidity measurement difficult and how to overcome that ?
c) What are advantages of neural network modeling over theoretical and empirical modeling?
d) Draw a pressure thickness relationship for a woven fabric to show both linear and non-linear part and justify the shape of the curve by its equation.
e) What do you understand by eompression linearity? What do you conclude from this about the performance behaviour of a fabric ? (4*5)