Register Number: ……..

M.TECH DEGREE EXAMINATIONS: MAY / JUNE 2013

Second Semester

TEXTILE TECHNOLOGY

TTX506 : Yarn Quality Analysis

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 2 = 20 Marks)

1. Give the formula for finding U% in terms of area (a) between the instantaneous values x_1 and mean value (strand mean), Evaluation time (t).
2. Calculate the irregularity (U%) when the variance of a sample is 16 and mean is 38.
3. In a spinning mill the speed frame introduces 3% irregularity in the roving strand and it is fed to spinning machine which introduce 15.5% irregularity in the material, find out the over all irregularity.
4. Give the relationship between CV $(L)_{Rm}$ and the cut length.
5. The rotational speed of a card cylinder with locally damaged card clothing is 400 Rpm, and the production speed is 92 m/min. What is the wave length of the periodic mass variation in the card sliver as produced by the card cylinder?
6. The finisher draw frame delivery roller got eccentricity. The diameter of delivery roller is 32mm. The out put sliver from the draw frame is fed to speed frame which employs a break draft of 1.1 and main draft of 10. Find out the wave length (cm) of the fault in roving strand caused by the eccentric delivery roller of the draw frame.
7. What is a long term periodic variation?
8. Define RKM value of yarn.
9. Calculate the yarn tension in grams to be applied during the winding of yarn in cone form from ring cop using a cone winding machine, if the count of yarn is 14.7625 Tex and got an average lea strength of 60 lbs.
10. Give the difference between S_3 value and Hairiness index in Hairiness measurement.

PART B (5 x 16 = 80 Marks)

11. a) Explain in detail the classification and analysis of yarn fault created by mass variations.

(OR)

b) Explain with suitable example the interpretation and significance of U% and CV% for textile strands.

12. a) Explain in detail the effect of specimen length and total length on mass variation measurements of textile strands.

(OR)

b) In a cotton spinning mill , a yarn is produced with the drafts given below,

Department	Draft
Spinning	Main draft = 21.5 Break draft = 1.3
Speed frame	Main draft = 9 Break draft = 1.1
Finisher Draw frame	7.5
Breaker draw frame	7.5

The breaker draw frame is fed with card sliver. Calculate the cut length range of each department (carding to spinning). Consider the λ_{max} as 7.

13. a) With necessary sketches explain the reaction of the spectrograph with sinusoidal shaped mass variations and impulse shaped faults.

(OR)

b) With necessary sketches explain the various categories of periodic faults in fibre assembly indication as superimposed waves (harmonics) appear in the spectrogram.

14. a) Discuss in detail the effect of testing speed on yarn tensile properties.

(OR)

b) Explain the measurement and application of yarn modulus, creep and stress relaxation.

15. a) Explain the effect of yarn quality on comfort properties of fabric.

(OR)

b) Explain the various principles of hairiness measurement and discuss the effect of hairiness in weaving process.

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