KUMARAGURU
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M.TECH DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2014)

Second Semester

TEXTILE TECHNOLOGY

P14TXT201: Yarn Quality Analysis

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Match the following   [K$_2$]

List I(Material)	List II(Index of Irregularity)
A. Worsted Yarn	i. 2.3-3.3
B. Carded Short Staple Yarn	ii. 1.2-1.4
C. Combed Short Staple Yarn	iii. 1.0
D. Ideal yarn	iv.1.5-2.2

	A	B	C	D
a)	ii	i	iv	iii
b)	iii	ii	iv	i
c)	ii	i	iii	iv
d)	iv	ii	i	iii

2. The CV% of folded yarn= _____, where C-Number of single components in the folded yarn.   [K$_1$]

   a) CV% of single component yarn/ $\sqrt{C}$*2   b) CV% of single component yarn/ $\sqrt{C}$

   c) CV% of single component yarn/ C   d) CV% of single component yarn * 2 $\sqrt{C}$

3. The percentage mean deviation is equivalent to_____   [K$_2$]

   a) Standard Deviation %   b) CV%

   c) U%   d) Mean

4. If V(T) = Total Variance, V(l) =Variance within lengths, B(l) = Variance between lengths, then V(T)= _____   [K$_1$]

a) $V(T) = \sqrt{V(l)} + \sqrt{B(l)}$

b) $V(T) = V(l) / B(l)$

c) $V(T)^2 = V(l)^2 + B(l)^2$

d) $V(T) = V(l) + B(l)$

5. Which of the following statements are incorrect? [K₃]

1. The rotor spun and air jet spun yarns have surface fibres or filaments wrapping the remaining fibres that form the bulk of the yarn, thereby restricting the number and the actual projected length of hairs.

2. With cotton yarns, end breaks 2.5 per million meters of running yarn are viewed as indicating a good quality yarn.

3. On average, 20-30% of stoppages in cotton weaving result from yarn breaks and 60-70% are due to faults during warping and sizing.

4. A high Uster CV% will give knitted fabrics a patchy appearance.

a) 2 & 4

b) 2

c) 2&3

d) 3

6. The critical interfiber spacing required approximately _____ for capillary transport of moisture in a yarn for comfort properties. [K₂]

a) 0.4-0.6 times the fibre diameter

b) 0.1-0.2 times the fibre diameter

c) 0.1-0.2 times the fibre radius

d) 0.1-0.2 times the fibre circumference

7. The long thin faults have the faulty portion with _____ [Kₗ]

a) Greater than 45% by mean diameter and more than 32 cm by length

b) Greater than 45% by mean diameter and more than 8 cm by length

c) Greater than 75% by mean diameter and more than 32 cm by length

d) Greater than 75% by mean diameter and more than 8 cm by length

8. Assertion (A): As the specimen length increases, the breaking strength of yarn decreases. [K₃]

   Reason (R): The probability of weak spots occurring increases as the length of specimen increases.

a) A is false & R is false

b) A is true & R is false

c) A is true & R is true

d) A is false & R is true

9. Spinners double belongs to _____ class of classimat faults. [Kₗ]

a) E

b) F

c) G   d) H

10. Ascending the order of yarn strength realization for various spinning systems   [K$_2$]

     1.Rotor   2.Ring   3.Friction

     a)   2-3-1   b)   1-2-3

     c)   3-1-2   d)   1-3-2

PART B (10 x 2 = 20 Marks)

11. Underline the classification of yarn faults created by mass variations.   [K$_1$]

12. Restate the definition of mass variation with graphical representation.   [K$_2$]

13. Infer the importance of V(l) curves with respect to quality.   [K$_4$]

14. Predict the causes in textile quality due to between-bobbin variation in spinning.   [K$_5$]

15. Restate the definition of wavelength and amplitude in a spectrogram with the help of a graphical representation.   [K$_2$]

16. Restate the wavelength range for roving and spinning machines in a spectrogram.   [K$_2$]

17. Relate the minimum yarn strength and weaving performance.   [K$_3$]

18. Draw conclusions on the statement, "The specimen length influences yarn tensile properties".   [K$_4$]

19. Infer from the influence of fibre on the performance of weaving.   [K$_2$]

20. Distinguish the wear properties from comfort properties.   [K$_4$]

PART C (10 x 5 = 50 Marks)

21. Discuss on the theoretical limit for strand regularity and index of irregularity of fibre assemblies.   [K$_2$]

22. Interpret the relation and significance of U% and CV% for various textile strands with examples.   [K$_4$]

23. Infer the textile quality aspects from the V(l) and B(l) curves.   [K$_4$]

24. Review on the effect of specimen length and total length on the measurements of mass variation of textile strands.   [K$_2$]

25. Distinguish the normal spectrum from ideal spectrum of spectrogram.   [K$_4$]

26. Interpret the superimposed waves in a spectrogram.   [K$_2$]

27. Explain the influence of specimen length and test speed on yarn tensile testing.   [K$_2$]

28. Discuss about measurement of creep and stress relaxation.   [K$_2$]

29. Relate the yarn hairiness with performance of knitting and weaving.   [K$_3$]

30. Deduce the effect of yarn quality on fabric comfort properties. [K4]

PART D (2 x 10 = 20 Marks)

31. Validate the relationship between yarn strength and its CV% on performance in yarn winding as well as weaving with valid examples. [K4]

32. Formulate a case study on influence of yarn properties like strength, elongation and evenness on the performance of winding and warping. [K5]

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