Minor-I TTL 361 (Textile Testing)

02-09-2013 **Max Marks-20** **5.30-6.30 pm (IV-LT3)**

Attempt all questions.

1. 1000 fibres were tested for fibre length. It was found that the mean length was 1000 mm and the length distribution followed normal distribution. Number of fibres having a minimum length of 1196 mm was found to be 25. Find out: [3]

   a) S.D. of the dispersion.
   b) Number of fibres falling in the range - mean+2.58 SD and mean -1.32 SD
   c) % of fibres outside the range – mean+1 SD and mean-1.64 SD

2. A yarn has a nominal mean count of 60 and SD of 7. When a sample of 50 bobbins is tested, the S.D. is found to be 9. Is the variability of sample greater than the bulk? [2]
3. The standard deviation of a 60s count yarn is known to be 6 counts. What size of sample is necessary in order that the warning limit is 5 % of the mean? [2]
4. 60 leas of 40s cotton yarn were tested for lea strength. The 95% confidence interval was 100±2.94 lb. Calculate the number of tests required to give the maximum error of 10%. [2]
5. How is random sampling of a lot of fibres biased in favour of longer fibres? How can this bias be eliminated? [1]
6. In a yarn/sliver, long term unevenness tends to have lower magnitude and generally originates in the early stages of the processing. Comment [1]
7. Plot the comb sorter diagram and the Fibrograph for a polyester sliver with a fibre cut length of 38 mm. calculate the uniformity ratio. [3]
8. Why is CV a better measure of unevenness of yarns as compared to U%? [1]
9. In the expression for floating fibre%, the distance between the drafting rollers is not a factor. Comment. [1]
10. Two slivers of same denier, one each of nylon and polyester, are tested for unevenness on an Uster unevenness tester. How can you identify them from their U% plots? Assume similar variation in mass/length. [2]
11. Two yarns of 20s and 30s counts need to be produced on a spinning system using fibres with 0.75 D and 10 μ diameter having a CV of 5% for fibre wt/length. Find out the ratio of limit irregularities for the two yarns. [2]

No of SDs from mean (X)	% of values lying in the limit SD=0 and SD=±X
1.0	34
1.32	40
1.64	45
2.58	49.5