Attempt all questions.

1. Describe the mechanism of water vapour permeation in hydrophilic non porous coatings. [2]

2. Differentiate between air permeability and air porosity. [1]

3. A typical yarn is tested on a pendulum lever machine. The metal strip connecting the pulley and the upper jaw is inextensible. Now the metal strip is replaced with a material which has a tensile behavior similar to that of yarn. Describe the results obtained with the new setup. [3]

4. How is Sweating Guarded Hotplate Method closer to real situations than other test methods? [2]

5. A bone dry viscose fabric sample is exposed to an atmosphere of gradually increasing R.H. After reaching 80 R.H., the relative humidity is gradually reduced to 0%. Plot the regain vs R.H. curve for the process. [2]

6. Standard error of mean decreases with increasing sample size. Does it mean that the variability in population is dependent on sample size? [2]

7. The 99% limits of confidence interval for a population whose mean is M are ± L. What does it indicate? [2]

8. A strand of roving is being tested for mass unevenness in a capacitance based tester. Plot the curves showing the variation for the strand when the cut length is

    a)   10 mm and   b)   1 m [2]

Comment on the following statements:

9. Twist variations in a uniform yarn would show up in evenness testing by capacitance based testers. [1]

10. Fabrics with high porosity tend to have high permeability as well. [1]

11. RH of atmosphere may increase due to sudden drop in temperature even if absolute humidity remains constant. [2]

12. Standard error of mean decreases with increasing sample size. Does it mean that the variability in population is dependent on sample size? [2]

13. The 99% limits of confidence interval for a population whose mean is M are ± L. What does it indicate? [2]

14. A strand of roving is being tested for mass unevenness in a capacitance based tester. Plot the curves showing the variation for the strand when the cut length is

    a)   10 mm and   b)   1 m [2]

15. Briefly describe the effect of following parameters on abrasion of a fabric [3]
Fibre length, fibre diameter, twist in yarn

Choose the correct alternative:

16. The best indicator of variability among samples with a large range of means is [1]
CV, SD, Variance, range

17. Classify the following machines in CRL, CRT or CRE: [2]
Pendulum lever, pressley fibre bundle tester, Stelometer, Instron, machine based on inclined plane principle

18. The rate of loading (change in force with unit distance traversed) will not change with the following machine if the gauge length (sample length) is increased (neglect weak link effect)
CRL based, CRE based, CRT based [2]

19. The time to break a specimen will increase with following machines if gauge length (sample length) is increased (neglect weak link effect, all other parameters are unchanged) [2]
CRL based, CRE based, CRT based

20. **Complete the following sentences:** [4]
   a) Periodic variations of cyclic nature in textile materials may arise due to -
   b) In context of statistical analysis, F-table is consulted when
   c) In context of statistical analysis, t-table is consulted when
   d) Spectrograms generate a plot of _____ vs _____.