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Discipline: TEXTILE ENGINEERING
(Faculty of Engineering & Technology)

3rd PhD ENTRANCE TEST (PET-2018)

Roll No: _____ Date: **3rd June 2018** Signature of the Candidate._____

1. Wet spinning technique is commercially used to produce filament yarn of:

    (a) Polypropylene   (b) Polyester   (c) Nylon 66   (d) Acrylic ✓

2. Fibre individualization in a card will increase by increasing:

    (a) Licker-in to cylinder setting   (b) Doffer speed
    (c) Licker-in speed   (d) Cylinder speed ✓

3. Compared to the spinning of finer cotton yarns, the preferred rotor diameter for the production of very coarse cotton yarns would:

    (a) Be higher ✓
    (b) Be lower
    (c) Remain the same
    (d) Change depending on fibre strength

4. Increase in taper angle on sectional warping drum will normally require:

    (a) Higher warping speed
    (b) Lower warping speed
    (c) Increase in traverse speed
    (d) Decease in traverse speed ✓

5. For producing fabric of low intrinsic weight, the type of nonwoven fabric manufacturing technique is:

    (a) Melt blown   (b) Spunlace ✓   (c) Needle punched   (d) Stitch bonded

6. The highest washing fastness in a dyed cotton fabric would be obtained if the dye-fibre bond is:

    (a) Ionic   (b) Hydrogen   (c) Covalent ✓   (d) Van der Waal's force

7. Crease resist finishing of cotton fabric does not lead to:

    (a) Reduction in tensile strength
    (b) Increase in dimensional stability
    (c) Increase in moisture regain ✓
    (d) Increase in bending length

8. Nep count in a cotton fibre sample is measured by:

    (a) AFIS ✓
    (b) HVI
    (c) Uster tester
    (d) Stelometer

9. Consider the following assertion [a] and reason [r] and choose the most appropriate answer

    [a]: Heat setting increases the dimensional stability of synthetic fabrics

    [r]: The free energy reduces as a result of heating

   - (a) [a] is right   [r] is wrong
   - (b) [a] is right   [r] is right
   - (c) [a] is wrong [r] is wrong
   - (d) [a] is wrong [r] is right

10. In the context of effluent discharge, BOD means

    - (a) Bio-oxidative degradation
    - (b) Bio oxygen distress
    - (c) Biological oxygen demand
    - (d) Bacteria observed on disc

11. Consider the following assertion [a] and reason [r] and choose the most appropriate answer

    [a]: Controlled reduction treatments are commercially used for shrink resist finishing of wool

    [r]: Reduction disrupts the disulphide bonds, which are responsible for wool shrinkage

   - (a) [a] is right   [r] is wrong
   - (b) [a] is right   [r] is right
   - (c) [a] is wrong [r] is wrong
   - (d) [a] is wrong [r] is right

12. A typical curve between equilibrium dye uptake and dyeing temperature goes through a maximum. After the maximum, the dye uptake decreases because:

    - (a) Kinetic energy increases rapidly
    - (b) Pressure in the dye bath increases
    - (c) Saturation value is reached
    - (d) Dyeing is an exothermic process

13. If d is the diameter, the rate of air flow through a fibre plug during fibre fineness measurement will be proportional to:

    (a) d   (b) d^2 (c) d^4 (d) $1/d^2$

14. The number of neps in a carded web follows Poisson distribution with a mean of 100 per m^2. The probability that there is no neps in an area of 645 cm^2 is:

    (a) $e^{-6.45}$ (b) $e^{6.45}$ (c) e^{-645} (d) e^{645}

15. Fabric thickness is related to:

    - (a) Sum of warp and weft diameter
    - (b) Sum of crimp height
    - (c) Sum of yarn diameter and crimp height
    - (d) Sum of warp and weft spacing

16. If Tg, Tm, and Tc represent the glass transition, melting and crystallization temperature, respectively. Then the correct relationship is:

    (a) $Tg < Tc < Tm$ (b) $Tg < Tm < Tc$ (c) $Tc < Tg < Tm$ (d) $Tm < Tg < Tc$

17. A loom is designed to run at 500 ppm. If the fabric width is 2.5 m and weft crimp on the loom is 8%, the weft insertion rate in m/min on the loom will be:

   (a) 1000   (b) 1250   (c) 1350 ✓   (d) 1450

18. CLASSIMAT faults which has highest possibility of causing an end break during further processing is:

   (a) D4 ✓   (b) G   (c) H2   (d) I2

19. Limitation in package size in Precision winding is mainly due to:

   (a) Coil angle approaches towards 90^0 with the build of the package ✓
   (b) Tension level in the threads increases
   (c) Patterning in package
   (d) Energy consumption becomes greater

20. Jigger **CANNOT** be used for:

   (a) Dyeing   (b) Printing ✓   (c) Washing   (d) Scouring

21. For a two fold increase in reed width, the work done per pick will be increased by:

   (a) 2-times   (b) 4-times ✓   (c) 8-times   (d) 16-times

22. In connection with bursting strength, higher value of bursting strength can be attributed to:

   P: Higher warp and weft yarn strength
   Q: Higher warp and weft yarn elongation
   R: Equal extensions in warp and weft directions at the time of bursting
   S: Higher crimp removal without jamming the structure

   (a) P, Q, S   (b) P, R, S   (c) P, Q, R ✓   (d) Q, R, S

23. Moisture wicking is maximum in the fabric made out of following material:

   (a) Cotton   (b) Wool   (c) Blend of polyester and cotton   (d) Polyester ✓

24. Sley velocity in m/sec at the front center of a loom running at 300 rpm is:

   (a) 0 ✓   (b) 15   (c) 30   (d) 45

25. Milling is associated with the processing of:

   (a) Cotton fabric   (b) Silk fabric   (c) Jute fabric   (d) Wool fabric ✓

26. Dyed wool fabric standards are used for the evaluation of:

   (a) Wash fastness   (b) Perspiration fastness   (c) Sublimation fastness   (d) Light fastness ✓

27. Match the items in **Group I** with those in **Group II**.

   Group I

   P: Ring spinning
   Q: Rotor spinning
   R: Air-vortex spinning
   S: Air-jet spinning

   Group II

   1: Real twist, mechanical twisting, low fibre migration, aerodynamic drafting
   2: False twist, aerodynamic twisting, low fibre migration, roller drafting
   3: Real twist, mechanical twisting, high fibre migration, roller drafting
   4: Real twist, aerodynamic twisting, high fibre migration, roller drafting

   (a) P-3, Q-2, R-1, S-4   (b) P-4, Q-3, R-2, S-1   (c) P-3, Q-1, R-4, S-2 ✓   (d) P-3, Q-2, R-4, S-1

28. Adipic acid is a monomer for the production of:

(a) Poly(ethylene terephthalate) (b) Nylon 66 (c) Nylon 64 (d) Nylon 610

29. In melt spinning line, the melting of solid polymer and its homogenization takes place in:

(a) Manifold (b) Extruder (c) Metering pump (d) Quench duct

30. In cotton yarn sizing, the starch primarily acts as:

(a) Binding agent (b) Lubricating agent (c) Antistatic agent (d) Antimicrobial agent

31. The correct sequence of unit operations employed in production of viscose rayon is:

(a) Ageing - Steeping - Xanthation - Ripening
(b) Ageing - Steeping - Ripening - Xanthation
(c) Steeping - Ageing - Ripening - Xanthation
(d) Steeping - Ageing - Xanthation - Ripening

32. The limitation of dobby shedding to increase the number of heald shaft is mainly due to:

(a) Warp strain increases
(b) Size of the dobby increases
(c) Energy consumption increases
(d) Open shedding not possible

33. In which fabric construction, constituent thread anchor more rigidly at cross over points:

(a) 5 end sateen fabric
(b) Double jersey weft knitted fabric
(c) Rachel warp knitted construction
(d) Leno fabric

34. For substitution of tissue paper, the type of nonwoven fabric which is considered to be the best:

(a) Spunlace (b) Spunbonded (c) Needle punched (d) Meltblown

35. Bicomponent fibre is suitable for manufacturing one of the following nonwoven fabric:

(a) Melt blown (b) Spunlace (c) Needle punched (d) Spunbonded

36. The RKM value of a yarn of 50 Nm and breaking load of 400 gf will be:

(a) 50 (b) 20 (c) 40 (d) none of the above

37. Prewetting of yarn before sizing leads to:

(a) Reduced size add-on (b) Increased size add-on
(c) Increased hairiness (d) None of above

38. The efficacy of the wash-n-wear treatment can be estimated by measuring its:

(a) Bending length (b) Tensile strength (c) Dye uptake (d) Crease recovery

39. Match the property from Group I with the characterization technique from Group II.

Group I
P: Spherulite size
Q: Degradation temperature
R: Crystalline orientation
S: Melting temperature

Group II
1: Optical microscopy
2: X-ray diffraction
3: Differential scanning calorimetry
4: Thermogravimetric analysis

(a)   P-2, Q-3, R-1, S-4
(b)   P-2, Q-3, R-4, S-1
(c)   P-1, Q-4, R-2, S-3
(d)   P-2, Q-1, R-3, S-4

40. Formability of fabric can determine

(a)   Degree of stretchability of fabric
(b)   Tear strength of fabric
(c)   Fabric friction
(d)   Degree of tensile compression before buckling