2018
TEXTILE TECHNOLOGY
(Degree Standard)

Time Allowed : 3 Hours] [Maximum Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. The applicant will be supplied with Question Booklet 15 minutes before commencement of the examination.
2. This Question Booklet contains 200 questions. Prior to attempting to answer the candidates are requested to check whether all the questions are there in series and ensure there are no blank pages in the question booklet. In case any defect in the Question Paper is noticed it shall be reported to the Invigilator within first 10 minutes and get it replaced with a complete Question Booklet. If any defect is noticed in the Question Booklet after the commencement of examination it will not be replaced.
3. Answer all questions. All questions carry equal marks.
4. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
5. An answer sheet will be supplied to you, separately by the Room Invigilator to mark the answers.
6. You will also encode your Question Booklet Number with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, action will be taken as per commission’s notification.
7. Each question comprises four responses (A), (B), (C) and (D). You are to select ONLY ONE correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet there are four circles A, B, C and D against each question. To answer the questions you are to mark with Blue or Black ink Ball point pen ONLY ONE circle of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. e.g. If for any item, B is the correct answer, you have to mark as follows:
   \[ \begin{array}{cc}
   \text{A} & \bullet \\
   \text{C} & \text{D}
   \end{array} \]
9. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the time of examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
10. The sheet before the last page of the Question Booklet can be used for Rough Work.
11. Do not tick-mark or mark the answers in the Question Booklet.
12. Applicants have to write and shade the total number of answer fields left blank on the boxes provided at side 2 of OMR Answer Sheet. An extra time of 5 minutes will be given to specify the number of answer fields left blank.
13. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.
1. For a fibre, when the moisture regain increases, the thermal conductivity
   (A) increases
   (B) decreases
   (C) initially increases and then decreases
   (D) initially decreases and then increases

2. The effect of second order transition temperature in polyester fibre in
   (A) reduction in birefringence
   (B) increase in birefringence
   (C) increase in absorption of water
   (D) increase in stiffness

3. The melting point of polyester is
   (A) higher than acetate
   (B) lower than polyethylene
   (C) higher than polyethylene but lower than nylon
   (D) higher than wool and lower than viscose rayon

4. Among the following fibre which one is having serrated cross section?
   (A) cotton
   (B) silk
   (C) viscose
   (D) kapok

5. The major part of the cotton fibre is covered by
   (A) Primary wall
   (B) S3 layer only
   (C) Secondary cell wall
   (D) Lumen

6. A fibre which is soluble in acetic acid in 2 minutes at boiling point in
   (A) cotton
   (B) silk
   (C) wool
   (D) acetate
7. The first successful synthetic fibre is
   (A) polyester
   (B) nylon [✓]
   (C) acrylic
   (D) polypropylene

8. Refractive index is the ratio of velocity of light in ———— to the velocity of light in ————.
   (A) material and vacuum
   (B) vacuum and material [✓]
   (C) atmospheric space to material
   (D) material to atmospheric space

9. Triacetate has negative birefringence value because of
   (A) isotropic arrangement of polymer chains
   (B) bulks acetate groups [✓]
   (C) anisotropic arrangement of polymer chains
   (D) thin acetate groups

10. Birefringence values of Poly Ethylene Teraphthalate (PET) fibre is
    (A) 0.0188
     (B) 0.188 [✓]
    (C) 1.88
     (D) 18.8

11. For showing dichroism, which one of the following condition is to be satisfied?
    (A) the dye molecule must be asymmetrical
    (B) the dye molecule must be symmetrical [✓]
    (C) the dye molecule should not absorbed by the fibre
    (D) the orientation of chain molecules should be poor

12. Among the following, which fibre is having negative birefringence value?
    (A) Ramie
    (B) Triacetate [✓]
    (C) Polyester
    (D) Polyethylene
13. The decomposition temperature of viscose is
   \( \checkmark \) higher than cotton
   (B) lower than cotton
   (C) lower than cotton but higher than wool
   (D) higher than cotton but lower than wool

14. The static change on card sliver after lending is measured by
   (A) Shirley moisture meter
   (B) Tog meter
   \( \checkmark \) Faraday cylinder
   (D) Galvanometer

15. The electrical resistance of protein fibres are
   (A) lower than cellulosic fibres
   (C) equal to cellulosic fibres
   \( \checkmark \) higher than cellulosic fibres
   (D) equal to synthetic fibres

16. Ratio of dry strength to wet strength of viscose rayon fibre is
   (A) 0.5
   \( \checkmark \) 2
   (C) 4
   (D) 0.25

17. Bending and bursting of fibre influences ———— properties of fabrics.
   \( \checkmark \) Drape and Handle
   (B) Frictional
   (C) Electrical
   (D) Optical

18. 27 mm fibre was extended to 30 mm and upon relaxation it reached to 27.2 mm. Its elastic recovery % is
   (A) 0.666
   \( \checkmark \) 93.3
   (B) 6.66
   (D) 9.33
19. The ripeners of viscose solution is measured by

- Salt index (A) Xanthation ratio
- Birefringence (B) Sonic modulus

20. Line of breaking force across the fibre would be long for _______ polymer molecules.

- randomly aligned long (A) perfectly aligned short
- perfectly aligned long (B) randomly aligned linear

21. Which one of the following is not a fibre forming polymer?

- A tactic polypropylene (B) Isotactic polypropylene
- Syndiotactic polypropylene (C) Polyethylene terephthalate

22. One way mass transfer of solvent occurs in

- dry spinning (A) wet spinning
- dry-jet wet spinning (B) melt spinning

23. The humidity has a significant influence on drawing of one of these synthetic fibres. The fibre is

- Nylon 6 (A) PET
- Polypropylene (B) Polyethylene

24. The crimps are introduced in PET staple fibre by

- stuffer box texturising (A) edge crimping
- false twist texturising (B) chemos texturising

25. The fibre which is very difficult to texture by false twist texturising is

- polyester (A) nylon 6
- nylon 66 (B) polypropylene
- polypropylene (C)
26. The high drips in melt spinning occurs due to
   (✓) low quench air velocity   (B) improper sand size
   (C) die swell                   (D) draw resonance

27. The rapid quenching of nylon 6 from molten state results in
   (A) $\alpha$ form                     (B) $\beta$ form
   (C) $\gamma$ form                  (D) pseudo hexagonal form

28. ____________ fibre undergoes cyclization reaction before reaching its melting point.
   (✓) Acrylic      (B) Polyurethane
   (C) Polylactic acid (D) Cotton

29. The best feeder yarn for good crimpability and refractivity in false twist texturising is
   (A) LOY                  (D) POY
   (C) FDY                   (D) HDY

30. The cross-section of spinneret used for producing hollow fibre is
   (A) C-shaped          (B) Rectangular
   (✓) Annular concentric (D) Triangular

31. Identify the fibre with negative glass transition temperature
   (✓) polyethylene     (B) nylon 6
   (C) polyester        (D) poly acrylonitrile

32. The Diethylene glycol formation is maximum during ____________ stage in PET synthesis.
   (✓) poly condensation (B) trans esterification
   (C) monomer synthesis (D) granule formation
33. In which spinning system, twisting of fibres in yarn making process taken place from the inside outwards?
   (A) Ring spinning
   (C) Wrap spinning
   \( \checkmark \) Rotor spinning
   (D) Airjet spinning

34. Which part of the ring spinning machine imparts twist to the yarn?
   (A) spindle
   (C) lappet thread guide
   \( \checkmark \) traveller
   (D) ring rail

35. Bolster is a part of
   \( \checkmark \) spindle in ring frame
   (B) flyer in roving frame
   (C) creel in ring frame
   (D) drafting system in ring frame

36. For a strongly twisted roving, what is the range of break draft into be given in the ring spinning process?
   (A) 1.1–1.4
   (C) 1.3–1.5
   \( \checkmark \) 1.3–1.5
   (B) 1.14–1.25
   (D) 1.4–2.0

37. The range of break draft given in roving process is
   (A) 0.5–0.7
   (C) 5–10
   \( \checkmark \) 1.05–1.15
   (B) 1.05–1.15
   (D) 100–150

38. What is the range of over all draft of a comber drafting system?
   (A) 2–5
   (C) 25–35
   \( \checkmark \) 9–18
   (B) 9–18
   (D) 40 and above
39. The condition for lending disposition is
   (A) \( v_1 < v_2, \) \( v_2 \) must be in the opp. direction of \( v_1 \)
   (D) \( v_1 > v_2, \) \( v_2 \) must be in the opp. direction of \( v_1 \)
   (C) \( v_2 = v_1, \) \( v_2 \) must be in the opp. direction of \( v_1 \)
   (D) independent with \( v_1 \) and \( v_2 \)
   where \( v_1 \) = flats/doffer, \( v_2 \) = cylinder

40. Calculate the dtex value for cotton fibre of fineness value of 4.
   (A) \( \text{dtex} = 4 / 0.394 \)
   (D) \( \text{dtex} = 4 \times 0.394 \)
   (C) \( \text{dtex} = 4 \times (0.394)^2 \)
   (D) \( \text{dtex} = 4 / (0.394)^2 \)

41. In case of automatic winding machine, theoretically maximum number of spindles per knotter is depends on
   (A) speed of the machine
   (D) count of the yarn
   (C) strength of the yarn
   (D) skill of the operator

42. In case of tappet shedding looms, which of the following type of heald movement is preferred for high speed looms
   (A) parabolic and simple harmonic
   (B) parabolic and cyclodial
   (C) polynomial and cyclodial
   (D) polynomial and simple harmonic

43. The increase in sley eccentricity value in shuttle loom
   (A) increases the shuttle speed
   (D) increases the cost of the loom
   (C) decreases the width of the loom
   (D) decreases the vibration in the loom

44. Climax doby is ———— doby.
   (A) single lift single jack
   (B) double lift single jack
   (C) single lift double jack
   (D) double lift double jack
45. In multiphase weaving machine warp sheet is formed by
   (A) Heald shaft  (B) Rotating weaving rotor
   (C) Tappet  (D) Jacquard

46. In a random winding machine, tension device is positioned ———— the yarn clearer.
   (A) above  (B) after
   (C) before  (D) below

47. Ratio of length of yarn in the winding and binding layers in a pirn
   (A) >1  (B) <1
   (C) 1  (D) 0.5

48. When size concentration is 40% wet pickup 60% warp sheet oven dry mass of 450 kg passed through size box, determine the size add-on.
   (A) 12  (B) 24
   (C) 18  (D) 30

49. A fabric woven from a shuttle less loom with 70 picks/min. The loom runs at a speed of 400 picks/min with 87% loom efficiency. The product of fabric in length (meter) per shift of 8 hours is
   (A) 66.6  (B) 60.6
   (C) 30.3  (D) 32.3

50. The propelling force in the weft carrying system in airjet is enacted by
   (A) airjets kept at both the ends
   (B) multiple airjets kept along the pathway of weft
   (C) air-propulsion at one end and air suction at other ends
   (D) air propulsion and air suction at both the ends
51. The wheatstone bridge network of strain gauges in the load cell is excited from an oscillator at a frequency of

(A) 375 C/S  (B) 300 C/S
(C) 275 C/S  (D) 325 C/S

52. The minimum number of tests and length of test specimen (in) for Grey yarn (single) spun from long bast fibres is ———— and ————

(A) 20 and 10  (B) 20 and 5
(C) 50 and 10  (D) 50 and 1

53. Specific surface of a fibre is

(A) \( \frac{2}{d} \)  (B) \( \frac{4}{d} \)
(C) \( \frac{\pi d}{4} \)  (D) \( \frac{4}{\pi d} \)

54. In ———— type of sample every individual in the population has an equal chance of being included in it

(A) Biased sample  (B) Random sample  (C) Squaring technique  (D) Zoning technique

55. In the context of Kawabata evaluation system, match the fabric properties from Group I with the units from Group II

<table>
<thead>
<tr>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Tensile energy</td>
<td>1. gt. cm(^2)/cm</td>
</tr>
<tr>
<td>(b) Linearity of load – elongation curve</td>
<td>2. Percentage</td>
</tr>
<tr>
<td>(c) Bending rigidity</td>
<td>3. gt cm/cm(^2)</td>
</tr>
<tr>
<td>(d) Compressional resilience</td>
<td>4. Dimensionless</td>
</tr>
</tbody>
</table>

(A) 1  4  3  2

(B) 3  4  1  2

(C) 2  4  1  3

(D) 3  1  4  2
56. In the fast system, the fabric formability is determined by the product of fabric
   (A) Bending rigidity and extension
   (B) Bending rigidity and thickness
   (C) Bending rigidity and weight
   (D) Bending rigidity and cover factor

57. Which of the following fabric strength property is analysed by bursting strength tester?
   (A) Terry fabric
   (B) Carpet fabric
   (C) Filter fabric
   (D) Silk fabric

58. The fabric test length in case of strip test is
   (A) 6 inches
   (B) 8 inches
   (C) 10 inches
   (D) 12 inches

59. In which of the following tensile testing equipment, the error percentage due to friction is
    completely eliminated?
   (A) Tester working under inclined plane principle
   (B) Tester working under spring principle
   (C) Tester working under balance principle
   (D) Tester working under strain gauge principle

60. Which of the following tensile testing equipment works under pendulum lever principle?
   (A) Stetometer
   (B) Pressley strength tester
   (C) Cambridge extensometer
   (D) Instron tensile tester

61. What is the twist factor of 64 tex yarn having 32 turns per meter?
   (A) 4
   (B) 26
   (C) 98
   (D) 256

CETET/18 12
62. Transfer printing of polyester belongs to
   (A) Resist style          (B) Discharge style
   (C) Colour discharge style (D) Direct style

63. Continuous dyeing machine
   (A) Jigger machine         (B) Soft flow machine
   (C) Winch machine          (D) Padding mangle machine

64. Poor rubbing fastness is associated with cotton and __________ dye combinations.
   (A) Direct                        (B) Reactive
   (C) Vat                           (D) Bifunctional

65. The efficiency of mercerisation is determined by
   (A) Methylene blue number       (B) Copper number
   (C) Iodine test                 (D) Barium activity number

66. The neutralisation of fabric using acid after bleaching is called
   (A) Scouring                      (B) Souring
   (C) Antichlor                    (D) Reduction clear

67. The dye which is water insoluble is
   (A) Direct dye                  (B) Reactive dye
   (C) Acid dye                    (D) Vat dye
68. 'Condensed phase' mechanism of flame retardancy is achieved with
   ✓ Phosphorous containing flame retardants
   (B) Aluminium trihydrate and calcium carbonate based fillers
   (C) Boric acid based salts
   (D) Halogen based flame retardants

69. An undyed fabric finished with cationic softener shows yellowing effect. It is due to
   ✓ Oxidation of the softener
   (B) Volatility of the softener
   (C) Poor emulsion stability
   (D) Thermo migration of dyes

70. A severe tendering and disintegration of fabric occurred after sodium hypochlorite bleaching. This may be due to
   ✓ traces of iron and copper present in cotton
   (B) action of stabilizer
   (C) action of buffer
   (D) action of salts

71. The bioscouring of cotton can be carried out mostly by
   ✓ Alkaline pectinase
   (B) Acidic cellulase
   (C) Neutral cellulase
   (D) Amylase

72. Among the following bleaching agents, bleaching of cotton is carried out in acidic condition for
   (A) Calcium hypochlorite
   ✓ Sodium chlorite
   (B) Sodium hypochlorite
   (D) Hydrogen peroxide
73. Which of the following relation is used to calculated the tightness factor value of weft knit fabric?
(A) loop length in cm/$\sqrt{\text{tex}}$
(B) loop length in cm/tex
(C) $\sqrt{\text{tex}}$/ loop length in cm
(D) tex / loop length in cm

74. Invisible fleecy fabric is a

- Single jersey  (B) Double jersey
- Flat knit      (D) Warp knit

75. The purpose of ‘splice mark’ on the spreading table is

- to regulate the thickness of the lay  (A)
- to regulate the width of the fabric (B)
- to indicate the faults in the fabric (C)
- to indicate the joining point of the fabrics (D)

76. Notcher is one of the

- Pattern making tool  (A)
- Marking tool      (B) Lay cutting tool
-                     (D) Fabric spreading tool

77. Which of the following stitch class is used for ‘baisting’ operation?

- lock stitch  (A)
- multi thread chain stitch (C)
- chain stitch (D) over edge chain stitch

78. ‘Over-lock welting’ type of over edge chain stitch is formed by the combination of

- one needle and one looper thread  (A)
- one needle and two looper thread (B)
- two needle and one looper thread (C)
- two needle and two looper thread (D)
79. Which of the following is not the part of line planning process?
(A) Evaluating merchandise mix
(B) Planning merchandise budget
(C) Determining the styles in the line
(D) Analysing and cydating merchandising plan

80. It is used to get fancy effects by using coloured yarns
(A) Tuck stitch (B) Float stitch
(C) Purl stitch (D) Knit stitch

81. Analyzing technical design of an apparel is one of the activities of
(A) Line planning (B) Line development
(C) Line presentation (D) Line loading

82. Perceptual mapping is a diagrammatic technique used by asset markets that attempt to visually display the perceptions of customers.
(A) Need (B) Potential
(C) Selecting (D) Varying

83. Temporary silicone finishing of fabric is important for
(A) Pedalling type sewing machine
(B) Motor driven low speed sewing machine
(C) Motor driven high speed sewing machine
(D) Pedalling type high speed sewing machine

84. Single thread chain stitch belongs to class
(A) 100 (B) 200
(C) 300 (D) 400
85. Nonwoven web from cotton fibres can be preferably formed by ___________ bonding methods.

(A) Thermal and mechanical

√ (C) Mechanical and chemical

(C) Thermal and chemical

(D) Mechanical and Interlacement

86. 90 complete to and-fro strokes over 40 inch width is made by a cross-lapper in one minute while the delivery lattice speed is maintained at 7m/min. If the hank of the feed lap is 0.0013 Ne and the actual draft of the cross-lapper carding machine is 103, then the g/m² of the non woven web formed is

(A) 114

√ (B) 111

(C) 124

(D) 134

87. The major limitation of poly chloropene binders

√ (A) Crystallisation there by increasing the stiffness

(B) Not resistant to acids

(C) Undergo discoloration

(D) Poor weather resistant

88. The most preferred polymer to be deployed for extrusion coating of nonwovens with water resistant barrier and heat sealing properties is

(A) LDPE

√ (B) HOPE

(C) HMWPE

(D) PP

89. For wipes, the preferred bonding is

(A) needle punching

(D) spray bonding

(C) bulk calendering

(D) lamination
90. The mechanism by which particles are captured through attachment to the fibres within the body of filter medium due to electrostatic forces is
   (A) screening  (C) cake filtration
   (B) depth filtration  (D) sieve filtration

91. In case of basal embankment, the major factor to be considered is
   (A) stress relaxation  (C) mechanical conditioning
   (B) fatigue  (D) creep

92. In case of testing of Geotextiles relate to
   (A) holes in textile substrate  (C) velocity of air used for testing
   (B) diameter of particles  (D) penetration efficiency

93. Hot gas filtration of around 1000°C can be carried out using ____________ fibres.
   (A) Polypropylene  (C) Ceramic
   (B) Polyethylene  (D) Polyester

94. On impact, the full deployment of air bag takes
   (A) 55 milliseconds  (C) 0.5 milliseconds
   (B) 55 seconds  (D) 5 milliseconds

95. One of the most popular instrument for single fibre measurement is
   (A) Shirley comb sorter  (C) Reynolds and Branson tester
   (B) B.F.T sorter  (D) W.I.R.A. crimp tester

96. The dead weight suspended from the end of the bottom loop of the coupling to keep the harness pulled down when not required to be raised is called a
   (A) Lingo  (C) Grate
   (B) Griffe  (D) Jug board.
97. In costing, prime cost is defined as
   (A) Direct material cost + direct labour cost + direct expenses
   (B) Direct material cost + direct labour cost
   (C) Direct material cost + direct expenses
   (D) Direct material cost – direct labour cost + direct expenses

98. It deals with recording the time and rate of working under specific conditions
   (A) Method study
   (B) Work sampling
   (C) Predetermined time standard
   (D) Time study

99. Advertisement cost is an example for ________________ overheads.
   (A) Factory
   (B) Administrative
   (C) Selling and distribution
   (D) (A) and (B)

100. The technological aspect in a textile industry is an example for ________________ in TQM axioms.
     (A) Commitment
     (B) Involvement
     (C) Scientific knowledge
     (D) Motivation

101. It deals with behavioral issues as well as technical issues is an industry
     (A) supply chain management
     (B) management information system
     (C) business process reengineering
     (D) quality control circle

102. The consumers may share a strong need that cannot be satisfied by an existing product is called ________________ demand.
     (A) Negative
     (B) Non-existent
     (C) Latent
     (D) Decline
103. The two important natural protein fibres are _______ and _______.
(A) cotton and jute
✓ wool and silk
(B) silk and cotton
(D) wool and casein

104. First order transition temperature of Nylon 6.6 fibre is
(A) 40°C
(C) 230°C
(B) 80°C
(D) 260°C

105. XRD photograph of a cotton fibre would be having
(A) sharp spots
✓ slightly diffused broken rings
(B) slightly diffused rings
(D) diffused

106. Convolution in cotton fibre is because of
(A) fibrils
✓ cell sap evaporation
(B) primary wall
(D) fibre degradation

107. Fibre that is soluble in 80% formic acid
(A) Acrylic
✓ Nylon
(B) Poly Ethylene Terephthalate (PET)
(D) Cotton

108. Fine structure model of viscose rayon fibre is
(A) fibrillar
(C) micellar
(B) fringed fibrillar
(D) fringed micellar

109. Jute fibre is classified as natural cellulosic _______ fibre.
(A) bast unicellular
✓ bast multicellular
(C) leaf unicellular
(D) leaf multicellular
110. The density of asbestos is
   (A) lower than cotton
   (B) higher than polyester but lower than cotton
   (C) higher than cotton
   (D) higher than cotton and glass

111. The wave length of the electrons used in electron microscopy is
   (A) 10 Å
   (B) 5 Å
   (C) 1 Å
   (D) 0.05 Å

112. In a fibre, the length of the micro fibrils is
   (A) 1 μ
   (B) 0.1 μ
   (C) 100 Å
   (D) 0.1 Å

113. The orientation factor of Ramie fibre is
   (A) 0.54
   (B) 0.88
   (C) 0.74
   (D) 0.97

114. The proportion of non crystalline regions of the native cellulose is
   (A) one fourth of the total in native cellulose
   (B) one third of the total in native cellulose
   (C) half of the total in native cellulose
   (D) three fourth of the total in native cellulose

115. Among the following, which one of the fibre is completely crystalline?
   (A) cotton
   (B) nylon
   (C) glass
   (D) asbestos
116. Birefringence of a fibre in determined by measuring the
(A) refractive index along the fibre axis
(C) two principal refractive indices
(C) refractive index across the fibre axis
(D) refractive indices of \( x, y \) and \( z \) axis

117. When a fibre was subjected to 10% elongation, it developed a load of 120 gram-force. However, the load decreased with time through the fibre was held in the extended position. The cause for such decrease in load is because of \( \underline{\text{molecular stress and stress relaxation}} \) and the property is regarded as \( \underline{\text{molecular readjustment and stress relaxation}} \).
(A) molecular stress and stress relaxation
(C) molecular stress and creep
(D) molecular readjustment and creep

118. Static charge development in textile fibres can be overcome by
(A) decreasing electrical conductivity
(B) decreasing humidity
(C) increasing disorder
(D) increasing electrical conductivity

119. The second order transition temperature of polyester is
(A) \(-5^\circ C\)
(C) \(70^\circ C\)
(D) \(100^\circ C\)
(B) \(50^\circ C\)

120. The moisture absorbing fibres cannot be heat set, because
(A) the bond between the molecules are very strong
(B) the cross links between the molecules cannot be broken
(D) the melting point is very high
(C) the cross links between the molecules are broken and reformed on the wetting and drying of fibres
121. When the fibre is tested in standard conditions, the tenacity in g-wt/tex of cotton fibre is
   (A) higher than flax  
   (B) lower than flax but higher than jute  
   (C) lower than acetate  
   (D) higher than flax but lower than jute

122. Which one of the following statement in suitable for bast fibres when compared with cotton fibre?
   (A) poor recovery from strain and it can withstand large stress  
   (B) good recovery from strain and it can withstand small stress  
   (C) poor recovery from strain and it can withstand small stress  
   (D) good recovery from strain and it can withstand large stress

123. After recovery by the first test to measure creep, if the same load is applied again to a fibre, the rate of creep is
   (A) similar to the first test  
   (B) less than the first test of the specimen  
   (C) greater than the first test of the specimen  
   (D) equal to secondary creep

124. The torsional rigidity of a fibre can be obtained in terms of
   (A) tensile modulus  
   (B) shear modulus  
   (C) bending modulus  
   (D) specific stress

125. The neutral comonomer in acrylic polymer is
   (A) Methyl acrylate  
   (B) Sodium allyl sulphonate  
   (C) Sodium methallyl sulphonate  
   (D) Itaconic acid
126. Which one of the following is mechanical texturising process?
   (A) False twist texturising
   (B) Simultaneous draw texturising
   (C) Sequential draw texturising
   (D) Air Jet texturising

127. The process of drawing of as-spun filaments to impart orientation is typically carried out at temperatures
   (A) above glass transition
   (B) below $T_g$
   (C) near melting point ($T_m$)
   (D) at crystalization temperature

128. In the context of application at spin finish to synthetic fibres, the incorrect statement among the following is
   (A) spin finish dissipates static charge
   (B) spin finish reduces fibre breakage in carding
   (C) spin finish reduces the stiffness of the fibre
   (D) spin finish reduces the nap generation tendency in fibres

129. Which one of the following increases on increasing water concentration (catalyst) during nylon 6 polymerisation?
   (A) molecular weight
   (B) time of polymerisation
   (C) end groups
   (D) rate of polymerisation

130. In case of melt spinning, if $W$ is the mass through put rate, $\rho_0, L$ is the density of melt, $d_o$ is the spinnerette hole diameter, $n$ is the number of filaments, the average extrusion velocity ($v_0$) is given by expression

   (A) $v_0 = \frac{4W}{n\rho_0 \pi d_0^2}$
   (B) $v_0 = \frac{4\rho_0}{nW\pi d_0^2}$
   (C) $v_0 = \frac{4d_0^2}{nW\pi\rho_0}$
   (D) $v_0 = \frac{4\rho_0 n}{W\pi d_0^2}$
131. For producing a coarse count yarn from short staple trashy cotton sliver, the most suitable rotor is
   (A) large diameter rotor with narrow groove
   (B) small diameter rotor with wide groove
   (C) small diameter rotor with narrow groove
   (D) large diameter rotor with wide groove

132. 35 Kg raw cotton is mixed with 65 kg polyester in the blow room feed. If the raw cotton contained 6.5% trash which was removed completely in the blow room and carding process, the % blend proportion of cotton and polyester in the carding sliver is
   (A) 60% and 30%
   (B) 30% and 60%
   (C) 67% and 33%
   (D) 33% and 67%

133. In ring spinning, the tension in yarn is the maximum
   (A) In winding zone
   (B) Where the balloon radius is the maximum
   (C) Just below the lappet guide
   (D) Between the lappet guide and front roller

134. The draft in the roving frame is about
   (A) 100
   (B) 10
   (C) 3
   (D) 30

135. In a 3 over 3 drafting system, the ratio of the nip to nip distance between middle rollers to back rollers and middle rollers to front rollers would be
   (A) >1
   (B) <1
   (C) 1
   (D) 0.5

136. Ratio of mechanical draft to theoretical draft would be
   (A) >1
   (B) <1
   (C) 1
   (D) 0.5
137. How much noil% is increased when the depth of the top comb penetration is about 0.5 mm?
   (A) 2%  (B) 4%
   (C) 6%  (D) 10%

138. In a rectilinear comber, when the nippers are open, the length of lap feed by the feed roller is between _______ and _______.
   (A) 4 cm, 6.5 cm  (B) 4 mm, 6.5 mm
   (C) 10 mm, 12.5 mm  (D) 10 cm, 12.5 cm

139. Among the following which one is more soft with respect to top roller's degree of shore hardness?
   (A) 60°–70°  (B) 70°–80°
   (C) 70°–90°  (D) above 90°

140. Which one of the following is the additional effect of draft?
   (A) neps formation  (B) straightening of fibre hooks
   (C) fibre entanglement  (D) fibre breakage

141. In a yarn cross section, the number of fibres (n) are equal to
   (A) \( \frac{\text{Tex}_{\text{yarn}}}{\text{Tex}_{\text{fibre}}} \)  (B) \( \frac{\text{Tex}_{\text{fibre}}}{\text{Tex}_{\text{yarn}}} \)
   (C) \( \text{Tex}_{\text{fibre}} \times \text{Tex}_{\text{yarn}} \)  (D) \( \left( \frac{\text{Tex}_{\text{yarn}}}{\text{Tex}_{\text{fibre}}} \right)^2 \)

142. The intimate blending can be obtained by
   (A) lap blending  (B) web blending
   (C) sliver blending  (D) fibre blending
143. In _______ Jacquard, all the warp threads reaches the bottom of the shed on every pick.

   ✓ single lift, single cylinder       (B) double lift, single cylinder
   (C) double lift, double cylinder    (D) open shed

144. In case of automatic yarn clearing machine, clearing efficiency (CE) is defined as

   (A) \( CE = \frac{\text{Number of faults detected in the yarn}}{\text{Total number of faults in the yarn}} \times 100 \)

   (B) \( CE = \frac{\text{Number of objectionable faults detected in the yarn}}{\text{Total number of faults in the yarn}} \times 100 \)

   ✓ \( CE = \frac{\text{Number of objectionable faults detected in the yarn}}{\text{Total number of objectionable faults in the yarn}} \times 100 \)

   (D) \( CE = \frac{\text{Number of faults detected in the yarn}}{\text{Total number of objectionable faults in the yarn}} \times 100 \)

145. In a tex system, if the change in mass is 100%, what will be the approximate change in diameter?

   (A) 20%             (B) 30%

   ✓ 40%             (D) 50%

146. The draft plan in woven fabric design analysis indicates

   (A) Intercalation of warp and weft
   (B) Order of drawing warp through reed

   ✓ (C) Number of heald shaft required for weaving
   (D) Number of weft per design repeat

147. Which of the following statement is not correct with respect to crepe weave woven fabrics?

   (A) High twist yarn is used

   ✓ (B) They have prominent twill effect

   (C) Fabric surface is not smooth
   (D) They formed by insertion of one weave over other weave
148. Jute sacks in tubular form are produced from
   (A) narrow loom  (B) tape loom
   (C) spacer machine  (D) circular loom

149. In a twill fabric, the rate of achievement of twill upwards is 2, rate of advancement of twill outwards is 1, ends per cm is 42 and picks per cm is 21. Calculate the twill angle.
   (A) 45°  (B) 11°
   (C) 76°  (D) 60°

150. The weave that produces perforated fabrics and distorted thread effects is
   (A) Huck-a-lack weave  (B) Basket weave
   (C) Hopsack weave  (D) Mock leno weave

151. The mechanism which stops the loom when the shuttle fails to reach the shuttle box (or) shuttle trap in the warp shed is known as
   (A) shuttle checking mechanism
   (B) warp stop motion
   (C) weft protector mechanism
   (D) warp protector motion

152. The power required to drive a loom working on open shed principle is less, because
   (A) heald weight is less
   (B) speed is maximum
   (C) used only for simple weaves
   (D) unnecessary movement of the threads are avoided
153. Ratio of grab strength to strip strength is the highest when fabric extension (%) is
   (A) 0  (B) 5
   (C) 10  (D) 15

154. A 225 denier viscose yarn has a breaking strength of 7.5N. The yarn tenacity in CN/dtex is
   (A) 1  (B) 10
   (C) 3  (D) 30

155. Which of the following fabric is used for air bag applications at the driver side?
   (A) 25 × 25 twill weave polyester fabric
   (B) 46 × 46 plain weave Nylon 6, 6 fabric
   (C) 25 × 25 rip stop Nylon 6, 6 fabric
   (D) 41 × 41 plain weave polyester fabric

156. The property of fibres that AFIS does not measure is
   (A) Fibre length  (B) Fibre maturity
   (C) Short fibre index  (D) Nep content

157. The vibroscope method for determination of fibre fineness does not take into account of specimen
   (A) Natural frequency  (B) Tensile strength
   (C) Tension  (D) Length

158. Sample selection for testing requires
   (A) Biased approach to meet population mean
   (B) Random approach to meet population mean
   (C) Random approach to not to meet population mean
   (D) Biased approach to not to meet population mean
159. A group of cotton fibres were selected for maturity test and the results are 64% rod-like fibres, 14% dead fibres. Calculate the percent of thin walled fibres.

(A) 50%  
(C) 36%  
(B) 22%  
(D) 14%

160. In general, the floating fibre percentage in the drafting systems is calculated from the ______________ data.

(A) Shirley comb sorter  
(C) Schlumberger comb sorter  
(B) Sledge sorter  
(D) Digital fibro graph

161. In sampling process, the relationship between standard error of the mean (SEM) and the standard deviation of the population (SDP) is

(A) \[ \text{SEM} = \frac{\text{SDP}}{n} \]  
(C) \[ \text{SEM} = \frac{n}{\text{SDP}} \]  
(B) \[ \text{SEM} = \frac{\text{SDP}}{\sqrt{n}} \]  
(D) \[ \text{SEM} = \frac{\sqrt{n}}{\text{SDP}} \]

162. The zoning sampling method is used to determine

(A) Properties of sliver  
(C) Properties of yarn  
(B) Properties of fibre  
(D) Properties of fabric

163. Levoglucosan is related to ______________ finish.

(A) Antistatic  
(C) Fire retardant  
(B) Crease resistant  
(D) Soil release

164. Reactive printing of cotton uses

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(C) \[ \text{NaClO}_2 \]  
(D) \[ \text{NaClO}_3 \]
165. According to K-M theory, the concentration of dye in fabric is directly proportional to [R-Reflectance from sample]

(A) \( R \) \hspace{1cm} (C) \( \frac{1}{R} \) \hspace{1cm} (D) \( \frac{2R}{(1-R)^2} \)

166. Nylon/Wool blends are often dyed with

(A) Milling type acid dye
(B) Bifunctional reactive dye
(C) Hetero functional reactive dye
(D) Homo functional reactive dye

167. __________ is used as reducing agent in vat dyeing.

(A) Sodium hydrosulphite
(B) Sodium hypochlorite
(C) Sodium chlorite
(D) Sodium bromite

168. Which one of the following is not true about acid dyes?

(A) Acid dyes are sodium salts of organic acid
(B) Acid dyes have affinity to protein fibres
(C) Glauber salt is used as levelling agent during acid dyeing
(D) Acid dyes are relatively difficult to dissolve in water

169. __________ is the measure of strength of bonds by which dye is held to the fibre

(A) Heat of dyeing
(B) Entropy of dyeing
(C) Half dyeing time
(D) Chemical potential
170. The most commonly used discharging agent is
   (✓) formaldehyde sulfoxalates
   (B) sodium dichromate
   (C) potassium dichromate
   (D) glycerine

171. Which one of the following transfer printing is more preferred for garment panel units?
   (A) sublimation transfer
   (B) melt transfer
   (✓) film release
   (D) wet transfer

172. Which of the following statement is true for a rib knitting machine that works under delayed timing?
   (A) Cylinder needle first comes to the feeding position
   (D) Both cylinder and dial needle simultaneously reaches the feeding position
   (C) Dial needle first reaches the knock-over position
   (D) Both dial and cylinder needle simultaneously reaches the knock over position

173. The knit fabric with tuck stitches is ————————— then the knit fabric with knit stitches only.
   (A) Thinner
   (✓) Wider
   (C) Less porous
   (D) Highly extensible

174. Knitting needles with different butt sizes are used in circular knitting machine having
   (A) Swing cam
   (C) Split cam
   (B) Multi cam
   (D) Pattern drum
175. The width of the long groove in the sewing needle is ______ of blade diameter.
   (A) 15%  (B) 30%
   ✔ 45%  (D) 60%

176. In single needle lock stitch machine, the preferred feed-dog tooth pitch for sewing medium weight fabric is
   (A) 1 mm  (D) 1.5 mm
   (C) 2 mm  (D) 2.5 mm

177. In double needle lock stitch machine, the feed dog has ______ motion.
   (A) Circular
   ❄ Elliptical
   ✔ Lateral
   (D) Up and down

178. Majority of sewing machine prefers 'Z' twist yarns than 'S' twist yarns because
   (A) they have high strength
   (B) they are highly flexible
   (C) they have high elongation
   ✔ they don't loose twist

179. One of the limitation of polyester wrapped cotton core spun thread is
   (A) poor elasticity
   (B) high cost
   (C) low work of rupture
   ✔ high needle heat generation
180. Requirements of technical fabrics for soil mat are
   (A) weather resistance, opaque to sunlight and insects entry restriction
   (B) weather resistance, water impermeability and retention properties
   ✔ water penetration and retention properties and durability
   (D) weather resistance, sunlight transparency, water impermeability

181. Widely used fibres in geotextile applications are.
   (A) Polypropylene and Polybutylene
   (B) Polyethylene and Polybutylene
   ✔ Polypropylene and Polyethylene
   (D) Polyethylene and Polyvinyl alcohol

182. Cyclic loading performance of a technical fibre depends on
   (A) Elasticity
   (B) Elasticity at break
   (C) Elasticity at low extension
   ✔ Elasticity even at high extension

183. Tensile strength of Ultra High Molecular Weight Polyethylene (UHMWPE) in gram per denier is approximately
   (A) 0.55
   (B) 5.5
   ✔ 55
   (D) 555

184. Enduse property that is preferred from nonwovens
   ✔ Absorbency
   (C) Strength
   (B) Thermal conductivity
   (D) Density

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185. In calendering process, if the contact area is 30 mm$^2$ and the production speed is 300 m/min. The estimated contact time is

(A) 0.6 millisecond
(B) 0.06 millisecond
(C) 0.006 millisecond
(D) 6 millisecond

186. For the given fibres, heavily entangled fabrics can be produced by hydro entanglement at low pressure and energy for

(A) viscose
(B) glass
(C) carbon
(D) polypropylene

187. In case of needle punching, the punch density is calculated using

$[P_d = \text{punch density}, \ n_n = \text{number of needles per cm}, \ P = \text{fabric production speed}, \ S_f = \text{punch frequency}]$

(A) $P_d = \frac{n_n \times S_f}{P}$
(B) $P_d = \frac{n_n \times P}{S_f}$
(C) $P_d = \frac{n_n}{S_f \times P}$
(D) $P_d = \frac{P \times S_f}{n_n}$

188. Which one of the following statements is 'Incorrect' about fibre dispersing behavior in wet lay system?

(A) The dispersing property of fibres deteriorate with an increase in the fibre fineness ratio
(B) The dispersing property deteriorate with decrease in fibre stiffness
(C) Fibres which are non crimped form homogenous suspension
(D) Wettability of fibres in liquid medium does not influence dispersion

189. The type of reinforcement in which a tensile force is applied to the geotextile that is surrounded by soil on both sides is

(A) anchorage reinforcement
(B) membrane reinforcement
(C) shear reinforcement
(D) normal reinforcement

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ρ 35

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[Turn over
190. TSS is an effluent means
   (A) Total soluble solids  
   (C) Total sinking solids
   (D) Total soap solids
   ✔ Total suspended solids

191. Which one of the following is a secondary treatment process?
   (A) Equalisation  
   (C) Chemical coagulation
   ✔ Trickling filter
   (B) Neutralisation

192. The Biological oxygen demand in a textile processing industry is greatly reduced at
   (A) primary treatment
   ✔ secondary treatment
   (C) tertiary treatment
   (D) preliminary screening

193. The colour and oxygen demand in an effluent can be reduced using
   ✔ Bleaching effluent  
   (B) Scouring effluent
   (C) Desizing effluent
   (D) Printing effluent

194. An effluent which is characterized by high amount of hydrolysed dyes and dissolved salts is
   (A) disperse dyeing effluent
   (B) milling acid dyeing effluent
   (C) levelling acid dyeing effluent
   ✔ reactive dyeing effluent
195. Marker Efficiency % is calculated as
   \[ \frac{\text{Area of total marker}}{\text{Area of marker used for garments}} \times 100 \]

   (A) \( \frac{\text{Area of total marker}}{\text{Area of marker used for garments}} \times 100 \)
   (B) Area of total marker – area of marker used for garments
   (C) \( \frac{\text{Area of marker used for garments}}{\text{Area of total marker}} \times 100 \)
   (D) Area of total marker + Area of marker used for garments

196. The total heat release rate (kw min m\(^{-2}\)) will be minimum for fabric made of
   (A) Wool (B) Cotton / polyester
   (C) Mod acrylic (D) Meta aramid

197. The steps involved in method study procedure is
   (A) Select – examine – record – develop – install - maintain
   (B) Select – record – examine – develop – install - maintain
   (C) Examine – select – record – develop – install - maintain
   (D) Record – select – examine – develop – install - maintain

198. As per SITRA norms, the raw material cost in % is required for 100's combed yarn in
   (A) 46.5 (B) 58
   (C) 63 (D) 66.5

199. In a modern mill, the amount of energy consumed by a first passage draw frame for 40 Ne production is \( \text{kwh} \) for 8 machine running hours
   (A) 30 (B) 50
   (C) 70 (D) 288

200. As per SITRA norms, in a modern mill, standard load required for lighting systems is \( \text{kW} \) per 1000 spindles.
   (A) 10 KW (B) 1 KW
   (C) 5 KW (D) 0.5 KW