Seat No._____

SUB: TEXTILE ENGINEERING (TE)

Time:1 Hour 30 minutes

Instructions:

1. **Ensure that all pages are printed.**
2. **Use Black ball pen only**
3. **Change in option is not allowed**
4. **There is no negative marking**
5. **Use of non -programmable scientific calculator is allowed**

1. On absorption of moisture, the thermal insulation of cotton fabric will

   A Increase B Decrease

   C Remain the same D Fist increase then decrease

2. The glass transition temperature of amorphous part of Poly(ethylene terephthalate) is in the range of (deg Celcius)

   A -30 to -50 B 50 to 60

   C 60 to 70 D 70 to 80

3. Adipic Acid is a monomer for the production of

   A Polyethylene Terephthalate B Nylon 66

   C Nylon 64 D Nylon 610

4. Linen is one of the strongest natural fibre because of

   A Higher length of fibre B Higher crystallinity

   C Lower crystallinity D Higher amorphous region

5. Which of the following fibre is/are produced using the solvent-dry extrusion method?

   A Cellulose Triacetate B Orlon

   C Modacrylic D All of the above

6. Name of the commercially available flame retardant fibre is

   A Spandex B Lycra

   C Tetron D Nomex

7. Among the following, strength/weight ratio is highest for

   A Kevlar B Steel

   C Nylon D Polyester

8. Limiting Oxygen Index test is carried out to check efficiency of

   A Wash & wear finish B UV protective finish

   C Flame retardant finish D Water proofing

9. Which of the following fibre is naturally hollow?

   A Cotton B Ramie

   C Sisal D Kapok

10. Technora is a type of ……fibre

A M-aramid
B P-aramid
C Polyester
D Polyacrylate

11. Fibre popularly known as Lycra is chemically

A Polyolefin
B Polyurethane
C Polyacrilonitrile
D Polylacticacid

12. During crystallization of polyester

A Heat is evolved
B Heat is absorbed
C No exchange of heat takes place
D Small molecule such as water is eliminated

13. The blending technique that gives the most homogeneous mixing of fibres is

A Tuft Blending
B Lap Blending
C Sliver Blending
D Roving Blending

14. In a carding machine, in which of the following zones the fibre alignment is negatively affected to the maximum extent?

A Cylinder to flats carding region
B Licker-in to cylinder transfer region
C Doffer to calendar roller region
D Cylinder to doffer transfer region

15. Which of the following fancy yarns is produced through braiding or knitting?

A Ribbon yarns
B Snarl yarns
C Chenille yarns
D Slub yarns

16. Among following which spinning process produces a composite yarn

A Twilo
B Bobtex
C Siro Spinning
D Parafil spinning

17. Which type of trash is difficult to remove in Blow Room?

A Seed Coats
B Seeds
C Leafy Matters
D Sand and dust

18. Within one chase length, the tension in the yarn balloon is minimum when the winding happens in

A The shoulder (bottom) of the chase
B The neck (top) of the chase
C When the ring rail is moving up
D When the ring rail is moving down

19. DREF spinning belongs to

A Self-twist spinning
B Friction spinning
C Twistless spinning
D Air jet spinning

20. To produced double yarn with maximum tenacity, D/S ratio (Double to single twist ratio) should be kept

A 0.5 B 0.7

C 1.0 D 1.5

21. Which of the following parameters is not related to carding intensity?

A Angular speed of doffer B Number of workers

C Collection power of worker D Collection power of doffer

22. As the fibres land on the rotor, the fibres are in groups of

A More than 500 fibres B 100-500 fibres

C 10-50 fibres D 1-5 fibres

23. In case of two-package feed TFO process

A The yarn from the bottom package will be subjected to higher tension B The yarn from the top package will be subjected to higher tension

C Yarns from both the packages will be subjected to higher tension D Yarns from both the packages will be subjected to lower tension

24. Which of the following yarns have the best fibre orientation and parallization?

A Ring spun B Rotor spun

C Friction spun D Vortex spun

25. How many meters (accurate to the nearest integer) of fabric will be produced per hour on an ordinary shuttle loom running at 190 picks per minute with 80 % efficiency and inserting 60 picks per inch?

A 2 B 3

C 4 D 5

26. In which winding system the angle of wind remains constant?

A Random B Precision

C Step precision D All of the above

27. Dwell in the beat up mechanism is not there for

A Shuttle loom B Water Jet loom

C Flexible Rapier Loom D All of the above

28. Probability of warp breakage during weaving increases, when

A Warp extensibility is decreased B Warp unevenness is decreased

C End density is decreased D Warp hairiness is decreased

29. For weaving a plain woven fabric with 4 heald shafts and straight draft, how many minimum shedding cams are needed?

A 6 B 4

C 3 D 2

30. Temples on a loom

A Reduce strain on selvedge threads
B Assist fabric take up
C Control shuttle flight path
D All of the above

31. Bottom shaft of a shuttle loom, weaving 2 up 1 down twill weave, is rotating at 90 rpm. The speed of tappet shaft (in rpm) will be

A 45
B 60
C 90
D 180

32. For increasing the taper angle on a sectional warping machine, one would require to

A Increase the warping speed
B Decrease the warping speed
C Increase the traverse speed
D Decrease the traverse speed

33. High pressure squeezing in conjunction with high concentration is aimed at

A Increasing the dry pick up
B Laying the hairs more closely to the body of the yarn
C Lowering energy consumption
D Improving the yarn strength

34. In a loom, seven-wheel take-up motion is

A Negative and intermittent
B Negative and continuous
C Positive and intermittent
D Positive and continuous

35. Increase in the ratio of the length of crank to the length of connecting rod leads to

A Increase in sley eccentricity
B Decrease in sley eccentricity
C No change in sley eccentricity
D Initial increase and then decrease in sley eccentricity

36. Ball warping is mainly used in the manufacture of

A Terry towel
B Narrow fabric
C Denim
D 3D fabric

37. The cut squaring technique of sampling of fibres is not applicable to

A Bale
B Sliver
C Roving
D Yarn

38. Most popular warp knit structure used to produce underwear/lingerie is

A Purl
B Locknit
C Rib
D Full tricot

39. One ounce (Ozs) is equal to how many grams?

A 28.95
B 28.59
C 28.43
D 28.35

40. If the numerical value of yarn linear density expressed in Denier and that in English system is the same, this value to the nearest integer is

A 73
B 72
C 71
D 70

41. Shrinkage of cotton fabric during wetting is caused by

A Extension of fibres
B Crimping of fibres
C Swelling of fibres
D Compression of fibres

42. Sodium persuphate is used in

A Bleaching
B Scouring
C Mercerization
D Desizing

43. Which of the following statements is true?

A Sueding is a process that is similar to raising.
B Sueding is a process that is similar to singeing.
C Sueding is a process that is similar to calendaring.
D Sueding is a process that is similar to shearing.

44. A print paste cannot be prepared without

A Colourant
B Dispersing agent
C Thickener
D Carrier

45. Which of the following is not a Hydrolytic method of Desizing?

A Rot Steeping
B Chlorine Desizing
C Acid Desizing
D Enzymatic Desizing

46. In which style of printing Rongalite C is used?

A Resist
B Direct
C Discharge
D All of the above

47. In the context of foam finishing, the stability of form increases if

A The processing temperature is increased
B Silicon based chemicals are added
C Viscosity builders are added
D Average bubble size is increased

48. Swelling agent used during printing of nylon is

A Sodium carbonate
B Acetic acid
C Sodium sulphate
D Phenol

49. Laundaro meter is used to measure following property of a dyed fabric.

A Washing Fastness
B Perspiration fastness
C Rubbing fastness
D Fastness to gas fading

50. Ikat is also known as

A Resist dye technique
B Tie & dye technique
C Batik
D Block printing

51. Introduction of tuck stitch into a single jersey construction makes the resultant fabric

A Narrower
B Thinner
C More rigid in course direction
D Wider and porous

52. In weft knitted fabrics of the same mass per unit area produced from the same yarns, the structure which will give the highest thickness is

A Plain
B Rib
C Interlock
D Purl

53. Characteristics of Oxford cloth is

A Light weight, transparent, sheer, unbalanced
B Medium weight, opaque, balanced look, soft hand
C Heavy weight, opaque, balanced look, soft hand
D Heavy weight, opaque, balanced look, crisp hand

54. Weft Plush fabric

A Has longer tufts
B Is used for trousers
C Is not a velveteen
D All of the above

55. The weave in which the floats of warp oppose each other at the point where the weaves reverse

A Herringbone Twill
B Waved Twill
C Fancy Twill
D Re-arranged Twill

56. For same count of warp and weft, if ends/inch exceed the picks/inch, the twill angle (in deg)will be

A 20
B 45
C More than 45
D Less than 45

57. The weave used in Drill Cloth is

A Sateen
B Twill
C Matt
D Crepe

58. Theoretical limit for mass irregularity (CV_{lim}) of a cotton yarn does not depend on

A Mean fibre fineness
B Mean fibre length
C Mean yarn count
D CV of fibre fineness

59. The scientific study of the measurements and proportions of the human body is

A Anthropology
B Anatomy
C Anthology
D Anthropometry

60. Which method is useful for examining the non-periodic faults in the yarn?

A Spectrogram
B V-L curve
C Spectrophotometer
D Any one of the above

61. In which of the following two series of weft yarn and one series of warp yarn is used?

A 3 pick terry
B 5 pick terry
C Corded velvet
D Corded velveteen

62. The test statistic to be used for carrying out a test of hypothesis on the mean of a normal distribution with unknown variance is

A Z
B T
C Chi-square
D F

63. Gel permeation chromatography is useful for determining

A Crystallinity
B Surface characteristic
C Orientation
D Molecular weight

64. In sewing the problem of structural jamming can occur if

A Fabric weight is very high
B Warp and weft counts are very coarse
C Thread density in warp and weft very high
D Any one or all of the above

65. Which of the following modes of heat transfer takes place during through-air thermal bonding process?

A Convection
B Conduction
C Radiation
D None of the above

66. Nep count in a cotton fibre sample is measured by

A AFIS
B HVI
C Uster Tester
D Stelometer

67. The 2.5% span length is numerically nearer to

A Staple length
B Mean length
C Longest fibre length
D Short fibre%

68. The property that Kawabata Evaluation System does not measure is

A Shear rigidity
B Bending rigidity
C Compressional resilience
D Tensile strength

69. On a classimat, as compared to the yarn fault B2, the fault D3 is

A Thinner and longer
B Thicker and longer
C Thinner and shorter
D Thicker and shorter

70. A 25 tex cotton yarn has a twist factor of 30. The yarn twist, in turns per cm is

A 4
B 5
C 6
D 7

71. Inclined plane principle for tensile testing is based on

A CRL
B CRE
C CRT
D CRS

72. The ballistic strength testing machine measures

A Tensile stress
B Tenacity
C Initial modulus
D Work of rupture

73. Pressley fiber bundle strength tester IS based on the principle of

A Pendulum lever
B Balance
C Spring
D Inclined plane

74. A needle-punched nonwoven fabric has 2 mm thickness and 400 g/m2 areal density. If the fibre density is 0.9 g/cm3, the volume porosity (%) of the fabric, accurate to the nearest integer, will be .....

A 74
B 47
C 41
D 14

75. A yarn passing over a multiplicative tensioner with an angle of wrap of 90°. If the input yarn tension is 100 cN and coefficient of friction between yarn and tensioner is 0.2, then the output yarn tension in N, accurate to two decimal place, would be

A 0.36
B 0.39
C 1.36
D 1.39

76. A perpendicular–laid nonwoven

A Should not contain thermoplastic fibers
B Does not form a 3-D structure
C Cannot be used as a replacement of foam
D Exhibits high recovery from compression

77. In needle punching process, higher punch density cannot cause

A Lower web thickness
B Higher change of fabric dimensions
C Higher damage of fibres
D Higher permeability of fabric

78. Majority of the cotton grown in India is

A Organic
B Coloured cotton
C BT Cotton
D None of the above

79. In the context of effluent discharge, BOD means

A Bio-oxidative degradation
B Biological oxygen demand
C Bio oxygen distress
D Bacteria observed on disc

80. The most commonly used UF membrane in effluent plant is

A Spirally wounded module
B Flat membrane in plate and frame structure
C Hollow fibretype
D Tubular

81. Which is the convolution property of Laplace Transform?

A $f * g = \int_0^t f(u)g(t-u)du.$
B $f * g = \int_0^t f(u)g(t+u)du.$
C $f * g = \int_0^t f(t-u)g(t-u)du.$
D $f * g = \int_0^t f(u)g(t)du.$

82. Particular integral of $(D^2-3D+2)y=e^{5x}$

A $\frac{e^{5x}}{15}$ B $\frac{e^{5x}}{14}$

C $\frac{e^{5x}}{13}$ D $\frac{e^{5x}}{12}$

83. In binomial probability distribution, dependents of standard deviations must includes

A probability of q B probability of p

C Trials D All of above

84. Assume that if *f* is continuous on [a, b] and differentiable on (a.b). Also assume that if *f(a)* and *f(b)* have opposite signs and that *f'≠0* between a and b . then *f(x)= 0* _____ between a and b.

A At least once B At most once

C Exactly once D Not even once

85. For continuous function f(x)$\begin{cases} x^2+\lambda, & if\ x \geq 0 \\ -x^2-\lambda, & if\ x<0 \end{cases}$ then λ =

A 1 B 0

C -2 D 2

86. The general solutions $x(t)$ and $y(t)$ of the simultaneous equations $(D^2+D+1)x+(D^2+1)y=e^t$, $(D^2+D)x+D^2y=e^{-t}$ contains_____ arbitrary

A 3 B 2

C 0 D 1

87. Find, if any, the critical points of the function: $f(x,y)=x^3+y^3+2x+3y$

A $(0,0)$ B $(-1,1)$

C No Points D None of these

88. The fixed point of $W=\frac{Z-1}{Z+1}$ are

A $+1,-1$ B $+i,-i$

C $0,-1$ D $0,1$

89. The Laplace transform of $f(t)=e^t\sin(t)$.

A $\frac{a}{a^2+(s+1)^2}$ B $\frac{a}{a^2+(s-1)^2}$

C $\frac{s+1}{a^2+(s+1)^2}$ D $\frac{s-1}{a^2+(s-1)^2}$

90. The Newton's-Raphson iterative formula for finding $f(x)=x^2-1$, is

A $x_{i+1}=\frac{x_i^2-1}{2x_i}$ B $x_{i+1}=\frac{x_i^2+1}{2x_i}$

C $x_{i+1}=\frac{2x_i^2+1}{2x_i}$ D $x_{i+1}=\frac{2x_i}{2x_i^2+1}$

91. The partial differential equation $xy\frac{\partial^2 z}{\partial x} = 5\frac{\partial^2 z}{\partial y^2}$ is classified as

A Elliptic
B parabolic
C Hyperbolic
D None of the above

92. Rank of matrix A= $\begin{bmatrix} 0 & 0 & 0 & 0 \\ 4 & 2 & 3 & 0 \\ 1 & 0 & 0 & 0 \\ 4 & 0 & 3 & 0 \end{bmatrix}$

A 0
B 1
C 2
D 3

93. A root of the equation $x^3 - x - 11 = 0$ correct to four decimals using bisection method, is

A 2.3737
B 2.3838
C 2.3739
D None of the above

94. The integral $a \xrightarrow{\lim} \infty \int x^{-4} dx$

A Diverges
B Converges to $1/3$
C Converges to $-1/a^3$
D Converges to 0

95. Divergence operation result will always be.

A Vector
B scalar
C Scalar or vector
D None of these

96. The system of linear equations $(4k-1)x + y + z = 0$, $-y + z = 0$, $(4k-1)z = 0$ has a non-trivial solution if 'k' equals:

A ½
B 1/4
C ¾
D 1

97. The poles of $f(Z) = \frac{1}{(Z-2)^3 (Z-3)^2}$ is Z=2 and Z=3 is 0f order _____and_____ respectively.

A 2,3
B 3,2
C 3,3
D 2,2

98. A real root of the equation $x - \cos x = 0$ by the method of false position correct to four decimal places is

A 0.7391
B 0.7439
C 0.7347
D None of these

99. A rectangular box with a square base and no top has a volume of 500 cubic inches. Find the dimensions for the box that require the least amount of material.

A 10,10,5
B 5,5,20
C 5,10,10
D Not possible.

100. Newton-Raphson iteration formula for finding $\sqrt[3]{c}$, where C > 0, is

A $x_{n+1} = \frac{\left(2x_n^{\ 3} + \sqrt[3]{c}\right)}{3x_n^2}$

B $_{n+1} = \frac{\left(2x_n^{\ 3} - \sqrt[3]{c}\right)}{3x_n^2}$

C $x_{n+1} = \frac{\left(2x_n^{\ 2} + c\right)}{3x_n^2}$

D $x_{n+1} = \frac{\left(2x_n^{\ 2} - c\right)}{3x_n^2}$