TF 2004

EXPONENTIAL CAREER CAMPUS

SACHIN GUPTA AIR 1 GATE 2016

1. Among the following textile grade fibres, the highest elastic recovery is demonstrated
   - **A.** Viscose Rayon
   - **B.** Polyacrylonitrile
   - **C.** Nylon
   - **D.** Silk
2. Among the following, the fibre that has the lowest density is
   - **A.** Cotton
   - **B.** Nylon
   - **C.** Polyester
   - **D.** Polypropylene
3. Number average molecular weight of spinnable textile grade polyester is
   - **A.** 12,000
   - **B.** 18,000
   - **C.** 30,000
   - **D.** 40,000
4. The fibre property that is not governed by the amorphous content is
   - **A.** Dyeablity
   - **B.** Strength
   - **C.** Elongation
   - **D.** Fibre friction
5. Percent crystallinity of standard viscose rayon fibre is approximately
   - **A.** 20
   - **B.** 35
   - **C.** 50
   - **D.** 65
6. With an increase in the fibre moisture absorption
   - **A.** Strength of cotton increases
   - **B.** Strength of wool increases
   - **C.** Initial modulus of cotton increases
   - **D.** Initial modulus of wool increases
7. Average cotton fibre strength is cN/tex is
   - **A.** 10-20

B. 20-30

C. 30-40

D. 40-50

8. In the case of cotton, AFIS can be used to measured

A. Convolutions per unit length

B. Maturity

C. Strength

D. Elongation

9. Nep setting on evenness testers relates to the percent mass deviation based on yarn

A. 1 mm

B. 2 mm

C. 4 mm

D. 10 mm

10. Index of irregularity is the highest in the case of

A. Card Sliver

B. Roving

C. Carded Yarn

D. Combed Yarn

11. Yarn hairiness index obtained using hairiness sensor on Uster evenness tester refers to the total length of protruding hairs (in cm) for the yarn length of

A. 1 mm

B. 10 mm

C. 100 mm

D. 1000 mm

12. Most of the test standards for obtaining the yarn tensile properties specify a pretension of

A. 0.05 cN/tex

B. 0.10 cN/tex

C. 0.50 cN/tex

D. 1.00 cN/tex

13. The highest degree of mixing in the yarn is obtained by

A. Flock blending

B. Lap blending

C. Sliver blending

D. Web bending

14. In a carding machine, the setting is minimum between

A. Cylinder to licker in

B. Feed plate to licker in

C. Front plate to cylinder

D. Cylinder to doffer

15. In a fly frame, spindle top inserts with grooves are used to introduce

A. Real twist in the roving

B. Further draft in the roving

C. False twist in the roving

D. Tension in the roving

16. In ring spinning, Coriolis force acts in

A. Break draft zone

B. Main draft zone

C. Spinning zone

D. Balloon zone

17. A modern rotor spinning machine with 30 mm rotor diameter can achieve a maximum rotor speed of the order of

A. 50,000 rpm

B. 80,000 rpm

C. 1,30,000 rpm

D. 1,80,000 rpm

18. With an increase in draft, the drafting force

A. Increases

B. Decreases

C. Decreases and then levels off

D. Increases and then decreases

19. Hardness of a cone can be changed by changing the

A. Traverse

B. Wind per double traverse

C. Wind angle

D. Conicity of the package

20. In a surface driven winding machine, with an increase in package diameter

A. The winding speed would increase

B. The package rpm would go up

C. The coil angle would decrease

D. The number of coils per double traverse would fall steadily

21. Sizing of multifilament yarns is carried out to

A. Lubricate the yarn surface

B. Bind the filaments together

C. Increase the strength of the yarn

D. Suppress static development

22. The most lustrous fabric woven with the same sett from the same yarns would result from

A. 1/1 Plain weave

B. 2/2 Matt weave

C. 3/1 Twill weave

D. 5-end Sateen weave

23. The highest widthwise extensibility in a weft knit fabric would result from

A. Plain single jersey

B. 1x1 Rib

C. Purl

D. Interlock

24. The width of needle punched fabric is set by adjusting

A. Type of needles

B. Punching density

C. Traverse at the cross lapper

D. Strokes min of the punching machine

25. Cellulase is used for

A. Desizing

B. Reducing surface tension of the wash liquor

C. Bio-polishing of cotton fabrics

D. Removing proteinous impurities during scouring

26. The active bleaching species in sodium hypochlorite solution is

A. Cl_2

B. O^-

C. Cl^-

D. OCl^-

27. Shrinkage observed in cotton yarn after mercerization is a result of

A. Decreased diameter of fibres

B. Decreased length of fibres

C. Increased diameter of fibres

D. Increased length of fibres

28. A flat bed screen printing machine is an example of

A. A batch printing machine

B. A continuous printing machine

C. A semi-continuous printing machine

D. An off-set printing machine

29. Humidity control of the exhaust in a stenter leads to

A. Softer fabrics

B. Reduced energy consumption

C. Constant temperature in the stenter

D. Reduced pollution

30. A well known flame retardant is

A. DMDHEU

B. Rongalite

C. THPC

D. Polydimethyl siloxane

31. High elastic recovery of wool is predominantly a result of

A. Cystine linkage

B. $\alpha - \beta$ transformation

C. Deformation of amorphous regions

D. Percent crystallinity

32.

Group I	Group II
P Extruder	1 Melting
Q Spinneret	2 Mixing
R Filters	3 Metering
S Gear pump	4 Fibre formation
	5 Filtration
	6 Spin drawing

A. P1-Q4-R5-S3

B. P2-Q6-R5-S4

C. P2-Q3-R1-S5

D. P1-Q4-R5-S6

33.

Group I	Group II
P Nylon 66	1 Transesterification
Q Acrylic	2 Adipic acid
R Polyester	3 Condensation polymerization
S Nylon 6	4 PTA
	5 Solution spinning
	6 Caprolactum

A. P1-Q3-R2-S6

B. P2-Q4-R3-S1

C. P1-Q2-R3-S5

D. P2-Q5-R3-S6

34. Consider the following statements. Free shrinkage during heat setting leads to

P Disorientation in the amorphous regions

Q Increase in crystalline orientation

R Increase in crystal perfection

S Decrease in crystallinity

The set of correct statement is

A. P, Q

B. P, R

C. Q, R

D. R, S

35. The monomer/s that actually polycondense/s during the polymerization of nylon 6,6 is/are

A. Adipic acid

B. Hexamethylene diamine

C. A-H salt

D. Hexamethylene diamine and acetic acid

36. Select the incorrect statement from the following

A. Birefringence is measured by polarized optical microscopy

B. Fracture surfaces are best observed in Scanning Electron Microscope (SEM)

C. Melting of fibres occurs in a very narrow range of temperatures

D. Crystal size is measured by X-ray diffraction method

37. In a drawing process, the draw ratio (λ) is related to undrawn filament denier (df), undrawn filament density (ρ), drawn filament denier (df') and drawn filament density (ρ') in the

A. (df.ρ)/(df'.ρ')

B. (df.ρ')/(df'.ρ)

C. df/df'

D. df'/df

38. Assuming crystallinity of cotton as 0.67, approximate saturation moisture regain (%) of cotton based on one water molecule per absorption site is

A. 8

B. 10

C. 11

D. 13

39. In the context of solution spinning process, with an increase in the temperature of the spin bath the coagulation rate would

A. Increase

B. Decrease

C. Not change

D. Increase and then decrease

40. Consider the following statements with respect to tensile behavior of fibres

P Primary creep is related to time dependent deformation

Q Secondary creep is related to permanent deformation

R Elastic deformation is related to instantaneous deformation

S Work of rupture is related to area under the stress strain curve

The set of correct statement is

A. P, Q, S

B. P, R, S

C. P, Q, S

D. Q, R, S

41. Consider the following statements with respect to the false twist texturing

P It is a thermo-mechanical process

Q There is no net twist in the false twist textured yarn

R The temperature in the primary heater is kept near glass transition temperature

S Cooling zone is located before the friction twisting device

The set of correct statement is

A. P, Q, R

B. P, Q, S

C. Q, R, S

D. P, R, S

42.

Group I	**Group II**
P Polyester	**1** Smells like burning paper in flame
Q Silk	**2** Melts and fuses away from flame
R Viscose Rayon	**3** Dissolves in meta-cresol at 750c
S Cotton	**4** Smells like burning hair in flame
	5 Triangular cross section
	6 Serrated cross section

A. P2-Q4-R6-S5

B. P2-Q5-R1-S4

C. P3-Q6-R4-S1

D. P3-Q4-R6-S1

43.

Group I	Group II
P Short fibres	**1** 30 mm
Q Span Length	**2** 0.2 – 1.2
R Uniformity Ratio	**3** Less than 1
S Maturity Ratio	**4** 12.7 mm
	5 More than 1
	6 2.5%

A. P2-Q1-R3-S4

B. P4-Q6-R3-S2

C. P1-Q6-R3-S5

D. P4-Q2-R1-S3

44. For normal varieties of cotton, Uniformity Ratio is in the range of

A. 0.2 – 0.3

B. 0.4 – 0.5

C. 0.6 – 0.7

D. 0.8 – 0.9

45. Based on the analysis of a triangular comb sorter diagram, if 30% of fibres can be regarded as short fibres, the percentage of fibres by weight which should be removed at comber to obtain yarn free of short fibres is

A. 9

B. 10

C. 18

D. 30

46. On a draw frame, 6 slivers with a CV% of 6 each are drafted with a draft of 6. If the drafting system introduces 1.732% additional CV during the drawing of slivers, the CV% in drawframe sliver will be

A. 3

B. 6

C. 9

D. 12

47. Denier of a cotton fibre with a maturity ratio of 0.9 and microniare value of 4 will be

A. 1.0

B. 1.3

C. 1.6

D. 1.9

48. Classimat fault which has the highest probability of causing an end break during further processing is

A. D4

B. G

C. H2

D. I2

49. A two ply yarn has a resultant count of 18s Ne. Assuming 10% twist contraction during ply twisting, the yarn count (Ne) of single yarns used for ply twisting was

A. 32

B. 36

C. 40

D. 44

50. If the cotton system twist multiplier is 4.18, the twist multiplier in tex system will be approximately

A. 1000

B. 2000

C. 3000

D. 4000

51. A 30s Ne cotton yarn has an average strength of 350cN with CV of 10%. Minimum number of samples which must be tested to obtain an average value of yarn strength with less than 5% error 95% of times is

A. 10

B. 16

C. 25

D. 36

52. If 95% confidence range of the mean based on 36 test samples in ±5, the number of test samples required to obtain 95% confidence range of ±3 of the mean will be

A. 10

B. 50

C. 100

D. 144

53. In connection with abrasion testing of fabrics, higher values of abrasion resistance can be attributed to

P Lower top pressure on fabric

Q Lower fabric tension

R Higher fabric compressibility

S New abrading surface

The set of correct statement is

A. P, Q, S

B. P, R, S

C. P, Q, R

D. Q, R, S

54. In connection with drape testing, consider the following: The drape coefficient increases with

P Higher bending rigidity

Q Higher shear rigidity

R Lower fabric cover

S Higher fabric thickness

The set of correct statement is

A. P, Q, S

B. P, R, S

C. P, Q, R

D. Q, R, S

55. Among the following yarns, the finest is

A. 40s Ne

B. 40 Tex

C. 40 Denier

D. 100s Ne

56.

Group I	**Group II**
P Rotor spinning	**1** Friction Spinning
Q Twilo	**2** Back doubling

R DREF-2 **3** Open end spinning

S Air jet spinning **4** Water jet

5 False twisting

6 Wrapper fibres

A. P3-Q2-R5-S6

B. P6-Q3-R1-S5

C. P2-Q4-R3-S5

D. P6-Q5-R4-S1

57. Blending delay time in a multi mixer increases if

A. The machine speed is reduced

B. Capacity and number of chutes are reduced

C. The chutes are filled slowly

D. Capacity and number of chutes are increased

58. A blow room has three cleaners in series. The overall cleaning efficiency of the blow room is 60%. If the cleaning efficiencies of the first and the third cleaners are 30% and 25% respectively, the cleaning efficiency of the second cleaner is

A. 5.0 %

B. 11.9 %

C. 22.4 %

D. 23.8 %

59. Consider the following statements with respect to ring and travellers in a ring spinning machine

P The contact area between the ring and the traveller should be maximized

Q The center of gravity should be as high as possible

R The hardness of the traveller should be less than that of ring

S Elliptical travellers can be used with all types of rings

The set of correct statement is

A. P, Q

B. Q, R

C. P, R

D. P, S

60. In a carding machine, fibre straightening is attained to maximum extent in

A. Cylinder to flats carding region

B. Cylinder to doffer transfer region

C. Licker-in to cylinder region

D. Cylinder to under casing region

61. Consider the following statements with respect to compact spinning as compared to conventional ring spinning

P The spinning triangle is reduced to a large extent

Q The spinning tension is increased to a large extent

R The hairiness of the yarn is lower

S The yarn strength is lower

The set of correct statement is

A. Q, S

B. P, R

C. Q, R

D. R, S

62. A twin delivery draw frame delivers slivers of count 0.14s Ne at 300m/min with a production efficiency of 95%. The production rate in kg/hr is

A. 60

B. 125

C. 145

D. 290

63. Consider the following statements as the possible causes for the high U% of a ring spun yarn

P Apron slippage in the ring frame

Q Eccentric back bottom roller in ring frame

R Improper drafting in the draw frame

S Damaged front top roller in ring frame

The set of correct statement is

A. R, S

B. P, R

C. P, S

D. P, Q, S

64. In a sliver lap machine, 24 slivers of 0.12s Ne are combined and a draft of 2.4 is given. In the ribbon lap machine, 6 of these laps are combined after giving a draft of 4.2 to each of these laps. The linear density of the resultant lap in g/m is

A. 54.4

B. 59.2

C. 65.1

D. 70.3

65. Consider the following statements with respect to air jet spinning

P The air vortex speed in the second nozzle is higher than that of the first nozzle

Q The yarn has harder feel compared to ring spun yarn

R The yarn has uniform twist structure through out the yarn cross section

S A high draft of 100 to 200 is provided with roller drafting system

The set of correct statement is

A. P, Q, S

B. P, R, S

C. P, Q, S

D. Q, R, S

66. The final yarn count required in a ring frame is 40s Ne with 26 tpi. The twist contraction during spinning is 2.7%. If the feed roving count is 1.6s Ne, the draft in ring frame should be

A. 25.0

B. 25.7

C. 26.0

D. 26.7

67.

Group 1	**Group 2**
P Patterning	1 Precision winding
Q Constant gain of wind	2 Random winding
R Lappers	3 Sizing
S Chase length	4 Pirn winding
	5 Beam Sizing
	6 Entering and knotting

A. P2-Q1-R3-S4

B. P1-Q2-R4-S5

C. P3-Q2-R6-S4

D. P2-Q1-R5-S6

68.

Group I	Group II
P Shedding	**1** Pick spacing
Q Picking	**2** Cloth fell displacement
R Beat up	**3** Slough off
S Take up	**4** Staggering
	5 Eccentricity
	6 Noise

A. P4-Q6-R3-S1

B. P1-Q3-R5-S2

C. P3-Q1-R2-S4

D. P4-Q3-R2-S1

69. The asymmetric shedding of warp threads ensures that

A. Warp yarns are not strained beyond the Hookean region

B. There is no unbalanced vertical force at the cloth fell during weaving

C. The cloth cover improves

D. Friction between crossing warp threads is reduced to a minimum

70. Weaving of heavy fabrics on wide looms is carried out perfectly with a positive take up motion of the type

A. Continuous indirect

B. Continuous direct

C. Intermittent indirect

D. Intermittent direct

71.

Group 1	Group 2
P Reed mark	**1** Denting plan
Q Wavy selvedge	**2** Differential warp tension
R Lashing in	**3** Temple cutter
S Random floats	**4** Shed angle
	5 Picking force
	6 Reed count

A. P6-Q5-R3-S2

B. P2-Q1-R3-S4

C. P1-Q2-R3-S4

D. P2-Q1-R4-S5

72.

Group 1	**Group 2**
P Gauze	**1** Pile beam
Q Terry	**2** Back weft
R Crepe	**3** Doup thread
S Double cloth	**4** Pebbled fabric surface
	5 High twist yarn
	6 Positive dobby

A. P4-Q1-R3-S2

B. P3-Q1-R4-S2

C. P3-Q6-R5-S1

D. P2-Q4-R5-S6

73.

Group 1	**Group 2**
P Gripper	**1** Gabler
Q Rapier	**2** Dewas
R Air jet	**3** Projectile
S Water jet	**4** Filament weft
	5 Torsion bar
	6 Relay nozzles

A. P5-Q1-R6-S4

B. P3-Q2-R4-S6

C. P5-Q4-R6-S2

D. P3-Q1-R2-S4

74.

Group 1	**Group 2**
P Needle punching	**1** Barbed needle
Q Spunlacing	**2** Air jet
R Stitch bounding	**3** Extruder
S Spunbonding	**4** Water jet
	5 Stripper plate

6 Compound needle

A. P1-Q2-R4-S3

B. P3-Q5-R6-S4

C. P5-Q4-R6-S3

D. P1-Q4-R3-S2

75.

Group 1	**Group 2**
P Dial	**1** Warp knitting
Q Long and short needle	**2** Flat bed knitting
R Guide bar	**3** Socks knitting
S Sliders	**4** Purl knitting
	5 Circular knitting
	6 Interlock knitting

A. P5-Q6-R1-S4

B. P3-Q6-R2-S1

C. P5-Q2-R3-S4

D. P4-Q3-R1-S2

76. Consider the following statements. A board loom in comparison with a narrow loom of one fourth the reed space would

P Consume twice as much power

Q Work at the same weft insertion rate

R Operate at half the rpm

S Produce four times as much fabric

The set of correct statement is

A. P, S

B. R, S

C. Q, R

D. P, R

77. Assuming that there is no change in yarn crimp, the increase in areal density of a square woven fabric would be the highest when

A. The yarn tex is increased 4 times keeping the cover factor the same

B. The yarn tex is kept the same but the cover factor is doubled

C. Both yarn tex and cover factor are increased by a factor of 1.5

D. The cover factor is trebled while the yarn tex is reduced to half the original value

78. Fabric thickness is the maximum when

A. Sum of the crimp height and yarn diameter of warp equals that of weft

B. Either of warp or weft has zero crimp height

C. Weft crimp height is equal to warp yarn diameter

D. Warp crimp height is equal to weft yarn diameter

79. With an increase in the concentration of wetting agent the surface tension of the scouring solution would

A. Decrease

B. Increase

C. Decrease initially and then increase

D. Decrease initially and then level off

80. The optimum conditions for bleaching cotton with sodium chlorite are

A. pH12, room temperature

B. pH 10.5, boil

C. pH 7, 60 ^{o}c

D. pH 4.5, 80 ^{o}c

81. Consider the following statements in the context of cotton yarn mercerized under tension

P Crystallinity would reduced considerably

Q Dye uptake would increase

R Barium Activity Number (BAN) would increase

S Molecular weight would increase

The set of correct statement is

A. P, Q

B. P, S

C. Q, R

D. R, S

82. Dyeing of cellulose with direct dyes is

A. An exothermic process

B. An endothermic process

C. An athermic process

D. Not a thermodynamic event

83. Disperse reactive dyes were primarily developed for

A. Acrylic fibres

B. Viscose rayon

C. Nylon

D. Polypropylene

84. In the context of roller printing a small cut in the doctor blade would result in

A. A double streak

B. A single streak

C. A single wavy streak

D. A double wavy streak

85. Small white polka dots are to be obtained on a blue background. The most optimum approach would be to use

A. Direct style using screen printing tech

B. Direct style using roller printing tech

C. Discharge style using roller printing tech

D. Resist style using rotary screen printing machine

86. A bleached cotton was treated with DMDHEU. Upon evolution, the treated fabric was found to contain 1% nitrogen by weight. Assuming that the molecular weight of the anhydroglucose unit (agu) is 162, the number of crosslinks/agu will be approximately

A. 0.005

B. 0.058

C. 0.580

D. 5.800

87. The water repellency demonstrated by Polydimethyl Siloxane (PDMS) as compared to Polydibutyl Siloxane (PDBS) will be

A. Higher

B. Marginally lower

C. Considerably lower

D. The same

88. COD (Chemical Oxygen Demand), BOD (Biological Oxygen Demand) and ThOD (Theoretical Oxygen Demand) are terms used in the context of effluent control systems.

Consider the following statements