Textile Engineering and Fibre Science

Q.1 Density of cotton fibre is approximately

(A) 1.52 denier (B) 1.52 g/tex (C) 1.52 kg/m^3 (D) 1.52 g/cm^3

Q.2 The byproduct obtained from polycondensation of diethylene glycol terephthalate (DGT) is

(A) Glycolic acid
(B) Water
(C) Diethylene glycol
(D) Ethylene glycol

Q.3 Ziegler Natta catalyst is used in the polymerization of

(A) PET
(B) Nylon
(C) Acetate
(D) Polypropylene

Q.4 The cross-section of spinneret used for producing hollow fibres is

(A) C-shaped
(B) Rectangular
(C) Annular concentric
(D) Triangular

Q.5 For a given yarn count made from the same fibre, rotor spun yarn is bulkier than ring spun yarn, because

(A) Rotor spun yarn is more even than ring spun yarn
(B) Navel tube peels off the fibres from rotor spun yarn surface
(C) Rotor spun yarn has large number of wrapper fibres
(D) Yarn tension in rotor spinning is lower as compared to that in ring spinning

Q.6 Consider the statement, 'off-setting the front top drafting roller towards the front is beneficial in a ring spinning machine'. Which one of the following **CANNOT** be the reason for the same?

(A) It reduces the hairiness of yarn
(B) It results in smooth running of top drafting roller
(C) It reduces end breaks
(D) It results in shorter spinning triangle

Q.7 20s, 30s, 40s and 50s Ne cotton yarns have the same twist per cm. The yarn having maximum fibre obliquity is

(A) 20s Ne (B) 30s Ne (C) 40s Ne (D) 50s Ne

Q.8 During roller drafting, better fibre control is achieved by flexing the fibre strand over the bottom roller. The reason for this is

(A) Enhanced fibre to fibre coefficient of friction
(B) Enhanced fiber to fibre friction
(C) Reduced slippage of top roller
(D) Reduced fibre to metal friction

Q.9 For 2/2 twill weave, the heald shaft movement over one complete repeat will be the least in

(A) Bottom closed shed
(B) Semi open shed
(C) Centre closed shed
(D) Open shed

Q.10 In a flat bed knitting machine, the loop length is controlled by

(A) Raising cam
(B) Stitch cam
(C) Clearing cam
(D) Guard cam

Q.11 In a drum driven winder

(A) Traverse ratio is constant
(B) Traverse ratio reduces with the increase in package diameter
(C) Angle of wind increases with the increase in package diameter
(D) Angle of wind reduces with the increase in package diameter

Q.12 The power required for picking in a shuttle loom depends on

(A) Weave of the fabric
(B) Number of heald shafts
(C) Reed width
(D) Number of picking cams

Q.13 Out of the following, the one which is **NOT** a surfactant is

(A) Reducing agent (B) Wetting agent (C) Detergent (D) Dispersing agent

Q.14 The machine used for continuous processing of fabric is

(A) Winch
(B) Kier
(C) J-Box
(D) Jigger

Q.15 An example of a coagulant used in textile effluent treatment is

(A) Activated carbon
(B) Ferrous sulphate
(C) Hydrogen peroxide
(D) Sodium chloride

Q.16 Microbes growing on clothing derive nutrition from

(A) Atmospheric oxygen
(B) Digestion of polymer
(C) Sweat and contaminants
(D) Moisture in the air

Q.17 If the 50 % span length of a cotton fibre is 13.5 mm and the uniformity ratio is 45 %, then 2.5 % span length of this fibre in mm would be

(A) 10 (B) 15 (C) 30 (D) 35

Q.18 The nep setting on an evenness tester which will give the highest nep count is

(A) +400 % (B) +280 % (C) +200 % (D) +140 %

Q.19 Fabrics with the same sett but different weaves are woven on a loom. The tear strength will be minimum in a fabric having

(A) Plain weave (B) 3/1 twill weave (C) 5-end satin weave (D) 2/2 matt weave

Q.20 The property of fabric which influences drape the most is

(A) Tensile
(B) Compressional
(C) Shear
(D) Surface

Q.21 For a 5/3 twill weave, if the rotational speeds of the crank shaft, bottom shaft and tappet shaft are X, Y and Z respectively, then X:Y:Z would be

(A) 1:4:8 (B) 8:4:1 (C) 2:1:1 (D) 2:1:8

Q.22 In air-jet weaving, the acceleration of the weft yarn will be maximum when the yarn is

(A) Coarser and more hairy
(B) Coarser and less hairy
(C) Finer and less hairy
(D) Finer and more hairy

Q.23 For a plain woven fabric, the diameters of warp and weft yarns are 0.2 mm and 0.3 mm, respectively. The crimp in warp yarn is 9 % and pick spacing is 0.4 mm. The fabric thickness in mm is

(A) 0.32 (B) 0.50 (C) 0.64 (D) 0.75

Q. 24 The coarsest yarn amongst the following is

(A) 100 Ne (B) 50 denier (C) 50 dtex (D) 200 Nm

Q.25 Two cotton fibre varieties X and Y having linear density of 3.1 and 3.9 (micrograms/25.4 mm), respectively, are tested on an airflow instrument. The highest flow rate is obtained in the case of

(A) Fibre X with maturity ratio 0.9
(B) Fibre X with maturity ratio 1.0
(C) Fibre Y with maturity ratio 0.9
(D) Fibre Y with maturity ratio 1.0

Q.26 Warp and weft yarns with diameters of 0.4 mm and 0.6 mm, respectively, are used to produce plain woven fabric with end spacing of 0.8 mm and pick spacing of 1.2 mm. Assuming the degree of flattening to be 0.8 in both warp and weft yarns, the approximate fabric cover would be

(A) 0.56 (B) 0.66 (C) 0.76 (D) 0.86

Q.27 If the error in the measurement of the diameter of a yarn is 0.5 %, the error in the estimated cross-sectional area of this yarn would be

(A) 0.25 % (B) 1.0 % (C) 2.5 % (D) 5.0 %

Q.28 Size add-on **does not** depend on

(A) Roller hardness
(B) Drying cylinder temperature
(C) Size paste concentration
(D) Machine speed

Q.29 Ball warping is mainly used in the manufacture of

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

Q.30 The factor that **does not** influence the propelling force for moving the weft yarn on air jet loom is

(A) Coefficient of friction between air and yarn
(B) Air velocity
(C) Yarn strength
(D) Yarn diameter

Q.31 In the context of thermal bonding of nonwoven web, the statement which is **not** true is

(A) A thermoplastic component has to be present in the web
(B) Heat is applied until the thermoplastic component melts
(C) The polymer flows by surface tension and capillary action to fibre cross over points
(D) Chemical reaction takes place

Q.32 A 51 mm long fibre has 6 % crimp. The crimped length of the fibre in mm is approximately

(A) 44 (B) 46 (C) 48 (D) 50

Q.33 On a mass based evenness tester, thin place in a yarn at –40 % setting is counted if mass per unit length is

(A) 40 % of the mean mass per unit length
(B) 60 % of the mean mass per unit length
(C) 40 % of the mean mass per unit length or less
(D) 60 % of the mean mass per unit length or less

Q.34 Ratio of grab strength to strip strength is the highest when fabric extension (%) is

(A) 0 (B) 5 (C) 10 (D) 15

Q.35 Bursting strength of a woven fabric with the same warp and weft yarns is the highest when the ratio of ends/cm and picks/cm is

(A) 1.1 (B) 1.0 (C) 0.9 (D) 0.8

Q.36 Fabric abrasion resistance **cannot** be assessed by the loss in

(A) Strength (B) Thickness (C) Weight (D) Air permeability

Q.37 Bleached cotton fabric was sent to a laboratory for determination of Copper Number, which is an estimate of the presence of

(A) Hydroxyl groups
(B) Carboxyl groups
(C) Reducing groups
(D) Oxidizing groups

Q.38 Malachite Green is an important dyestuff. The typical green colour is obtained when the dye molecule is

(A) Nonionic
(B) Cationic
(C) Anionic
(D) Made up of phenyl groups

Q.39 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

Q.40 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

Q.41 Softener reduces the bending rigidity of fabrics by decreasing

(A) Inter-fibre and inter-yarn friction
(B) Modulus of the fibres
(C) Glass transition temperature of the fibres
(D) Packing coefficient of yarns

Q.42 Assume that the rate of evaporation of moisture from a wet fabric during drying process is proportional to the amount of moisture present in the fabric. If 50 % of the moisture is evaporated in the first 5 minutes then the time (min) taken to evaporate 90 % of the moisture is approximately

(A) 9 (B) 17 (C) 22 (D) 33

Q.43 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 nep in an area of 645 cm^2 is

(A) $e^{-6.45}$ (B) $e^{6.45}$ (C) e^{-645} (D) e^{645}

Q.44 A yarn of 24 mm length has a varying cross-section. The values of the cross-sectional area of yarn (mm^2), measured at equal intervals of 4 mm from one end are

0.09, 0.12, 0.14, 0.15, 0.16, 0.13, 0.11

The volume of yarn (mm^3) estimated by using Simpson's 1/3 rule of numerical integration is

(A) 2.40 (B) 2.80 (C) 3.20 (D) 3.36

Q.45 The chemical that is used to convert soda cellulose to sodium cellulose xanthate in the manufacture of viscose rayon is

(A) Carbon disulphide
(B) Sodium xanthate
(C) Sodium sulphide
(D) Sodium hydroxide

Q.46 The fibre that will float on water is

(A) Nylon (B) Polyester (C) Acrylic (D) Polypropylene

Q.47 The range of spinning speed (m/min) used in the manufacture of partially oriented polyester yarn is

(A) 1000 – 1200
(B) 2000 – 2500
(C) 2800 – 3500
(D) 4000 – 6000

Q.48 Drawing of synthetic filament **does not** lead to an increase in

(A) Crystallinity
(B) Tenacity
(C) Tensile modulus
(D) Elongation at break

Q.49 In a card, the wire point density is maximum on

(A) Cylinder (B) Flat (C) Doffer (D) Licker-in

Q.50 The spinning system that **does not** generate false twist during spinning is

(A) Ring spinning (B) DREF 3 (C) Rotor spinning (D) Air jet spinning

Q.51 Wet spinning technique is commercially used to produce filament yarn of

(A) Polypropylene
(B) Polyester
(C) Nylon 66
(D) Acrylic

Q.52 The fibre that dissolves in 59% (w/w) sulfuric acid solution is

(A) Wool
(B) Polypropylene
(C) Cotton
(D) Viscose

Q.53 Surface features of a fibre can be obtained by

(A) Transmission electron microscope
(B) Scanning electron microscope
(C) Small angle X-ray diffractometer
(D) Sonic modulus tester

Q.54 Birefringence of filament yarn is related to its

(A) Crystallinity
(B) Orientation
(C) Individual filament denier
(D) Density

Q.55 A machine that does not improve the mass evenness is

(A) Drawframe
(B) Ring doubler
(C) Speedframe
(D) Ribbon lap

Q.56 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

Q.57 Softer cots on drafting rollers result in

(A) An increase in drafting wave
(B) Less fibre slippage at roller nip
(C) Change in draft
(D) Reduced roller lapping

Q.58 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

Q.59 Amongst the following, the suitable technology for producing core spun yarn is

(A) Air vortex spinning
(B) Rotor spinning
(C) Friction spinning
(D) Air-jet spinning

Q.60 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

The End