

# National Testing Agency

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## Textile and Fibre Engineering

**Group Number :** 1  
**Group Id :** 2886076  
**Group Maximum Duration :** 0  
**Group Minimum Duration :** 120  
**Show Attended Group? :** No  
**Edit Attended Group? :** No  
**Break time:** 0  
**Group Marks:** 100  
**Is this Group for Examiner?:** No

## Textile and Fibre Engineering

**Section Id :** 2886076  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 100  
**Number of Questions to be attempted:** 100  
**Section Marks:** 100

**Sub-Section Number:** 1  
**Sub-Section Id:** 2886076  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Id : 288607501 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0**

The fibre that belongs to second generation fibres is

- (A) Nylon 66
- (B) Nylon 6
- (C) PET
- (D) Carbon

Options :

2886072001. 1

2886072002. 2

2886072003. 3

2886072004. 4

Question Number : 2 Question Id : 288607502 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

The most suitable fibre for use in marine environment (e.g. mooring ropes or fishing nets) is

- (A) Kevlar fibre
- (B) Nomex Fibre
- (C) High performance PE Gel fibre
- (D) PBO fibre

Options :

2886072005. 1

2886072006. 2

2886072007. 3

2886072008. 4

Question Number : 3 Question Id : 288607503 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

In gel spinning of ultra high molecular polyethylene, the value of optimum number of entanglements per chain is

- (A) 100
- (B) 2
- (C) 1
- (D) 10

Options :

2886072009. 1

2886072010. 2

2886072011. 3

2886072012. 4

Question Number : 4 Question Id : 288607504 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In the context of Gel spinning of ultrahigh molecular weight PE, the critical concentration

- (A) Decreases with increase in molecular weight of polymer
- (B) Increases with increase in molecular weight of the polymer
- (C) Decreases with increase in entanglement molecular weight of the polymer
- (D) Does not depend upon the molecular weight of the polymer

Options :

2886072013. 1

2886072014. 2

2886072015. 3

2886072016. 4

Question Number : 5 Question Id : 288607505 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

With respect to the structure of high performance PE fibres, the INCORRECT statement, among the following is

- (A) Folded polymer chain conformation
- (B) Strong chemical bonds in main chain
- (C) Reduced defects/flaws resulting from chain ends
- (D) Small cross-sectional area

Options :

2886072017. 1

2886072018. 2

2886072019. 3

2886072020. 4

Question Number : 6 Question Id : 288607506 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Meta phenylene diamine is a monomer for production of

- (A) Kevlar
- (B) Nomex
- (C) Poly benzoxazole
- (D) PIPD or M5

Options :

2886072021. 1

2886072022. 2

2886072023. 3

2886072024. 4

Question Number : 7 Question Id : 288607507 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The solvent used for spinning/production of aramid fibres is

- (A) 70% sulphuric acid
- (B) 80% sulphuric acid
- (C) 98% sulphuric acid
- (D) 100% sulphuric acid

Options :

2886072025. 1

2886072026. 2

2886072027. 3

2886072028. 4

Question Number : 8 Question Id : 288607508 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Among the following four fibres: Kevlar, Nomex, PBO and PIPD(M5), the fibre that shows highest compressive strength is

- (A) Kevlar
- (B) Nomex
- (C) PBO
- (D) PIPD (M5)

Options :

2886072029. 1

2886072030. 2

2886072031. 3

2886072032. 4

Question Number : 9 Question Id : 288607509 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The transition temperature of the temperature responsive polymers can be increased by

- (A) Increasing the ratio of hydrophilic to hydrophobic groups
- (B) Decreasing the ratio of hydrophilic to hydrophobic groups
- (C) Increasing the molecular weight of the polymer
- (D) Decreasing the molecular weight of the polymer

Options :

2886072033. 1

2886072034. 2

2886072035. 3

2886072036. 4

Question Number : 10 Question Id : 288607510 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The magnitude of response or equilibrium swelling% of the structures made from a temperature responsive polymer will be largest in

- (A) Films of 10 micron thickness
- (B) Films of 50 micron thickness
- (C) Fibres of 10 micron thickness
- (D) Fibres 50 micron thickness

Options :

2886072037. 1

2886072038. 2

2886072039. 3

2886072040. 4

Question Number : 11 Question Id : 288607511 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Lotus Leaf effect imparts the following property on textiles-

- (A) Hydrophilicity
- (B) Hydrophobicity and UV protection
- (C) Self-Cleaning and superhydrophobicity
- (D) Hydrophobicity and abrasion resistance

Options :

2886072041. 1

2886072042. 2

2886072043. 3

2886072044. 4

Question Number : 12 Question Id : 288607512 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Higher values of applied voltage in electrospinning generally leads to –

- (A) Thinner nanofibres
- (B) Thicker nanofibres
- (C) Beaded nanofibres
- (D) Non-uniform nanofibres

Options :

2886072045. 1

2886072046. 2

2886072047. 3

2886072048. 4

Question Number : 13 Question Id : 288607513 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Carbon nanotubes (CNTs) are composed of carbon atoms linked in hexagonal shape where each carbon atom is bonded to-

(A) 2 other carbon atoms

(B) 4 other carbon atoms

(C) 3 other carbon atoms

(D) 1 other carbon atom

Options :

2886072049. 1

2886072050. 2

2886072051. 3

2886072052. 4

Question Number : 14 Question Id : 288607514 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Nanofinishing of textiles with titania (TiO<sub>2</sub>) nanoparticles imparts following property-

(A) Electrical Conductivity

(B) Thermal Conductivity

(C) Flame Retardancy

(D) UV protective and antibacterial

Options :

2886072053. 1

2886072054. 2

2886072055. 3

2886072056. 4

Question Number : 15 Question Id : 288607515 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

In polymer nanocomposite having electrical conductivity the polymer matrix is reinforced with following nanomaterial-

- (A) Zinc Oxide nanoparticles
- (B) Carbon Nanotubes
- (C) Zeolites
- (D) Nanoclays

Options :

2886072057. 1

2886072058. 2

2886072059. 3

2886072060. 4

Question Number : 16 Question Id : 288607516 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Which of the following has a dimension in nanoscale ?

- (A) Red Blood Cell
- (B) DNA Molecule
- (C) White Blood Cell
- (D) Neuron Cell

Options :

2886072061. 1

2886072062. 2

2886072063. 3

2886072064. 4

Question Number : 17 Question Id : 288607517 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Fullerene is a caged nanostructure composed of following number of carbon atoms

- (A) 60
- (B) 65
- (C) 75
- (D) 55

Options :

2886072065. 1

2886072066. 2

2886072067. 3

2886072068. 4

Question Number : 18 Question Id : 288607518 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Single wall carbon nanotube has diameter in the range of

- (A) 1-5 nm
- (B) 10-20 nm
- (C) 20-30 nm
- (D) 1- 50 nm

Options :

2886072069. 1

2886072070. 2

2886072071. 3

2886072072. 4

Question Number : 19 Question Id : 288607519 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Layer by Layer (L-b-L) is technique used to create following effect on textile surface

- (A) Nanocomposite coating
- (B) Nanofiber deposition
- (C) Nanofinishing
- (D) Nanocoating

Options :

2886072073. 1

2886072074. 2

2886072075. 3

2886072076. 4

Question Number : 20 Question Id : 288607520 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The colour of silver nanoparticles changes size and shape due to following phenomenon

- (A) Surface Plasmon Resonance
- (B) Flourescence
- (C) Quantum Confinement
- (D) Piezoelectric effect

Options :

2886072077. 1

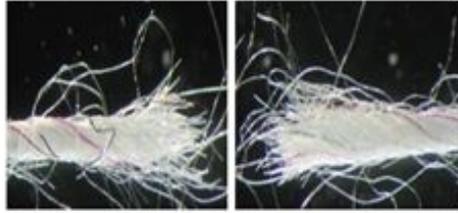
2886072078. 2

2886072079. 3

2886072080. 4

Question Number : 21 Question Id : 288607521 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The broken ends of spun yarn is given below. Name the type of broken end



- (A) Sharp broken end
- (B) Tapered broken end
- (C) Slipped broken end
- (D) Undulated broken end

Options :

2886072081. 1

2886072082. 2

2886072083. 3

2886072084. 4

Question Number : 22 Question Id : 288607522 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Compared to static tensile test performed on an Instron tensile tester, the dynamic tensile test results of spun yarns have

- (A) Higher proportion of fibre break, longer failure zone length and larger proportion of sharp broken yarn ends
- (B) Lower proportion of fibre break, shorter failure zone length and larger proportion of sharp broken yarn ends
- (C) Lower proportion of fibre break, longer failure zone length and lesser proportion of sharp broken yarn ends
- (D) None of the above

Options :

2886072085. 1

2886072086. 2

2886072087. 3

2886072088. 4

Question Number : 23 Question Id : 288607523 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

What is the length of weakest link in a spun yarn before break when the yarn extension at break is 10% with the measured failure zone length after break is 5 mm?

- (A) 5.5 mm
- (B) 4.5 mm
- (C) 4.9 mm
- (D) 5.1 mm

Options :

2886072089. 1

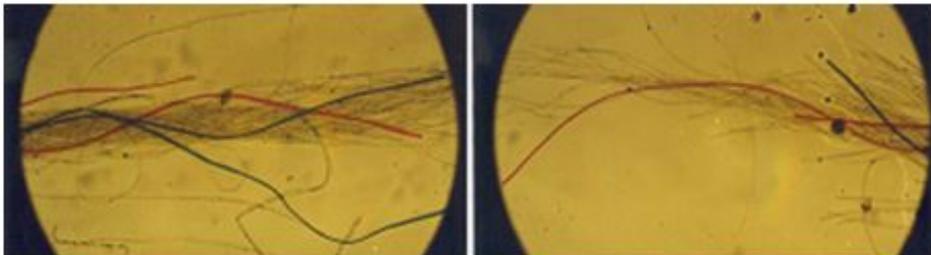
2886072090. 2

2886072091. 3

2886072092. 4

Question Number : 24 Question Id : 288607524 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The photographs of broken ends of spun yarn are shown below. What is the percentage of broken fibres in the yarn?



- (A) 25
- (B) 50
- (C) 100
- (D) 75

Options :

2886072093. 1

2886072094. 2

2886072095. 3

2886072096. 4

Question Number : 25 Question Id : 288607525 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

What is the axial stress (cN/cm<sup>2</sup>) on a fibre in a spun yarn at a distance 10 mm from its end when the yarn is under tension? Assume that fibre to fibre friction coefficient is 0.2, lateral stress on the fibre is X cN/cm<sup>2</sup> and the diameter of fibre is  $4 \times 10^{-4}$  cm.

- (A) 50X
- (B) 100X
- (C) 150X
- (D) 200X

Options :

2886072097. 1

2886072098. 2

2886072099. 3

2886072100. 4

Question Number : 26 Question Id : 288607526 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Among the load-extension curves of 50:50 PV spun yarns, which yarn exhibits kinks

- (A) Rotor
- (B) Airjet
- (C) Ring
- (D) None of the above

Options :

2886072101. 1

2886072102. 2

2886072103. 3

2886072104. 4

Question Number : 27 Question Id : 288607527 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Weavability of yarns can be assessed by

- (A) Average static tenacity of yarn
- (B) Dynamic tenacity of yarn
- (C) CV of average static tenacity of yarn
- (D) None of the above

Options :

2886072105. 1

2886072106. 2

2886072107. 3

2886072108. 4

Question Number : 28 Question Id : 288607528 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Weavability cycles measured on CTT tester with shed attachment is less affected by

- (A) Shed frequency
- (B) Yarn structure
- (C) Shed depth
- (D) All of the above

Options :

2886072109. 1

2886072110. 2

2886072111. 3

2886072112. 4

Question Number : 29 Question Id : 288607529 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Among the pairs given below, pick the unrelated ones

- (A) Dynamic tenacity:Weavability
- (B) Lowest static tenacity: Weavability
- (C) Average static tenacity:Weavability
- (D) Average static tenacity:Fabric strength

Options :

2886072113. 1

2886072114. 2

2886072115. 3

2886072116. 4

Question Number : 30 Question Id : 288607530 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Maximum tensile stress on a fibre in a spun yarn under extension depends on

(A) Fibe to fibre friction, length of fibre and breaking strength of fibre

(B) Breaking strength of fibre only

(C) Length fibre only

(D) None of the above

Options :

2886072117. 1

2886072118. 2

2886072119. 3

2886072120. 4

Question Number : 31 Question Id : 288607531 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Higher the Blending Delay Time means

(A) Slower is the production rate

(B) Fibre tufts move at faster rate between the machines

(C) Poor blending of fibres

(D) More uniform blending of fibres

Options :

2886072121. 1

2886072122. 2

2886072123. 3

2886072124. 4

Question Number : 32 Question Id : 288607532 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Which of the statements is correct?

- (A) Rotor yarns have wrapper fibres on the surface
- (B) Rotor yarn has higher mass variation compared to ring yarn of same count
- (C) Rotor yarn has uniform helical twist structure throughout its cross-section
- (D) Rotor yarn is stronger than ring yarn of same count.

Options :

2886072125. 1

2886072126. 2

2886072127. 3

2886072128. 4

Question Number : 33 Question Id : 288607533 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Which of the following statements is correct about BDT?

- (A) It increases with the mass flow rate
- (B) It increases with increase in number of chambers
- (C) It decreases with increase in number of chambers
- (D) It increases with opening roller speed

Options :

2886072129. 1

2886072130. 2

2886072131. 3

2886072132. 4

Question Number : 34 Question Id : 288607534 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

In a multi-mixer with 5 chambers, SBDT (Stabilised Blending Delay Time) is obtained in the following chamber

(A) 2

(B) 3

(C) 4

(D) 5

Options :

2886072133. 1

2886072134. 2

2886072135. 3

2886072136. 4

Question Number : 35 Question Id : 288607535 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Degree of mixing value 1.5 means

(A) Random blending

(B) Poor blending

(C) Close to perfect blending

(D) None of the above

Options :

2886072137. 1

2886072138. 2

2886072139. 3

2886072140. 4

Question Number : 36 Question Id : 288607536 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Which of the following is not possible for IBI value?

- (A) 0
- (B) 0.5
- (C) -1.0
- (D) 1.0

Options :

- 2886072141. 1
- 2886072142. 2
- 2886072143. 3
- 2886072144. 4

Question Number : 37 Question Id : 288607537 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In rotor spinning, the influence of cyclic aggregation of fibres in the rotor groove is to

- (A) Decrease the yarn hairiness
- (B) Improve the yarn evenness
- (C) Improve the twist flow
- (D) None of the above

Options :

- 2886072145. 1
- 2886072146. 2
- 2886072147. 3

2886072148. 4

Question Number : 38 Question Id : 288607538 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Within one rotation of the rotor, the gap behind the peel off point

- (A) Keeps increasing
- (B) Keeps decreasing
- (C) Remains constant
- (D) Increases for sometime then starts to decrease.

Options :

2886072149. 1

2886072150. 2

2886072151. 3

2886072152. 4

Question Number : 39 Question Id : 288607539 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Doffing tube novels with grooves are used for

- (A) Improving the evenness of the yarn
- (B) Proving false twist in the yarn arm.
- (C) Providing real twist in the yarn arm.
- (D) Increasing the twist density in the final yarn

Options :

2886072153. 1

2886072154. 2

2886072155. 3

2886072156. 4

Question Number : 40 Question Id : 288607540 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

A rotor of 36mm diameter is rotating at a speed of 1,50,000 rpm with the peel-off point rotating at a speed of 1,55,000 rpm. The number of back doublings will be

(A) 10

(B) 20

(C) 30

(D) 40

Options :

2886072157. 1

2886072158. 2

2886072159. 3

2886072160. 4

Question Number : 41 Question Id : 288607541 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Which of the following fabric is a disordered fibrous material?

(A) woven

(B) braided

(C) nonwoven

(D) knitted

Options :

2886072161. 1

2886072162. 2

2886072163. 3

2886072164. 4

Question Number : 42 Question Id : 288607542 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

The value of global orientation parameter ( $I$ ) for a two-dimensional (2D) random fibrous material is ....

(A)  $\frac{2}{\pi}$

(B)  $\frac{1}{2\pi}$

(C)  $\frac{1}{\pi}$

(D)  $\frac{\pi}{4}$

Options :

2886072165. 1

2886072166. 2

2886072167. 3

2886072168. 4

Question Number : 43 Question Id : 288607543 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

A random fibrous assembly made up of polypropylene fiber of diameter  $40 \mu\text{m}$  has a mass per unit area of  $100 \text{ g/m}^2$  and thickness of  $1 \text{ mm}$ . Assuming the density of polypropylene fiber to be  $0.91 \text{ g/cm}^3$ , the number of contacts per mm fiber length is nearly....

- (A) 6
- (B) 60
- (C) 75
- (D) 750

Options :

2886072169. 1

2886072170. 2

2886072171. 3

2886072172. 4

Question Number : 44 Question Id : 288607544 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Fiber A with defined orientation characteristics  $(\theta, \varphi)$  comes in contact with Fiber B with defined orientation characteristics  $(\theta', \varphi')$ . Assuming  $\theta$  and  $\theta'$  are the out-of-plane orientation characteristics and  $\varphi$  and  $\varphi'$  are the in-plane orientation angles of fibers A and B, respectively. The angle formed between the axes of fibers A and B ( $\chi$ ) is expressed as ...

- (A)  $\chi = \sin^{-1}(\cos\theta\cos\theta' + \sin\theta\sin\theta'\cos(\varphi - \varphi'))$
- (B)  $\chi = \tan^{-1}(\cos\theta\cos\theta' + \sin\theta\sin\theta'\cos(\varphi - \varphi'))$
- (C)  $\chi = \cos^{-1}(\cos\theta\cos\theta' + \sin\theta\sin\theta'\cos(\varphi - \varphi'))$
- (D)  $\chi = \cos^{-1}(\cos\theta\cos\theta' + \sin\theta\sin\theta'\sin(\varphi - \varphi'))$

Options :

2886072173. 1

2886072174. 2

2886072175. 3

2886072176. 4

Question Number : 45 Question Id : 288607545 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

.... function can be used for obtaining the orientation density function of fibers in 2D random fibrous materials.

(A) Harmonic

(B) Polynomial

(C) Exponential

(D) Dirac's delta

Options :

2886072177. 1

2886072178. 2

2886072179. 3

2886072180. 4

Question Number : 46 Question Id : 288607546 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Fiber volume fraction is defined as ....

(A)  $\frac{\text{Pore Volume}}{\text{Fabric Volume}}$

(B)  $\frac{\text{Fabric Density}}{\text{Fiber Density}}$

(C)  $\frac{\text{Fabric Volume}}{\text{Fiber Volume}}$

(D)  $\frac{\text{Fiber Density}}{\text{Fabric Density}}$

Options :

2886072181. 1

2886072182. 2

2886072183. 3

2886072184. 4

Question Number : 47 Question Id : 288607547 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

The calculation of mean number of fiber-fiber contacts in disordered fibrous materials is useful in predicting their ....

(A) geometrical properties

(B) mechanical properties

(C) hydraulic properties

(D) geometrical, mechanical and hydraulic properties

Options :

2886072185. 1

2886072186. 2

2886072187. 3

2886072188. 4

Question Number : 48 Question Id : 288607548 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

One of the main challenges faced by the theory of fiber-fiber contacts is  
simulating the ... structure of disordered fibrous materials

- (A) homogenous
- (B) isotropic
- (C) uniform
- (D) heterogeneous

Options :

2886072189. 1

2886072190. 2

2886072191. 3

2886072192. 4

Question Number : 49 Question Id : 288607549 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

.... refers to the use of geometrical representation and calculations to determine  
the probabilities of outcomes

- (A) Stereology
- (B) Cavalieri's Principle
- (C) Geometrical probability
- (D) Conditional probability

Options :

2886072193. 1

2886072194. 2

2886072195. 3

2886072196. 4

Question Number : 50 Question Id : 288607550 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The probability of finding the orientation of a fiber within the infinitesimal range of  $\theta \sim \theta + d\theta$  and  $\varphi \sim \varphi + d\varphi$  is given by  $\Omega(\theta, \varphi) \sin \theta d\theta d\varphi$ , where,  $\Omega(\theta, \varphi)$  is the orientation density function. However, the normalization condition that needs to be satisfied is....

(A)  $\int_0^\pi \int_0^\pi \Omega(\theta, \varphi) \sin \theta d\theta d\varphi = 0$

(B)  $\int_0^\pi \Omega(\theta, \varphi) \sin \theta d\theta = 1$

(C)  $\int_0^\pi \int_0^\pi \Omega(\theta, \varphi) \sin \theta d\theta d\varphi = 1$

(D)  $\int_0^\pi \Omega(\theta, \varphi) \sin \theta d\theta = 0$

Options :

2886072197. 1

2886072198. 2

2886072199. 3

2886072200. 4

Question Number : 51 Question Id : 288607551 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Textile structures are used as reinforcing material for structural composite manufacturing because :

- (A) They offer high strength/weight ratio
- (B) It is easy to produce isotropic structures
- (C) It is possible to produce any complex reinforcement geometry
- (D) All structures can be produced on existing conventional machines

Options :

2886072201. 1

2886072202. 2

2886072203. 3

2886072204. 4

Question Number : 52 Question Id : 288607552 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The principal concern in textile structural composites is :

- (A) Corrosion resistance
- (B) Net shape manufacturing
- (C) Light weight
- (D) High cost of production and repair safety

Options :

2886072205. 1

2886072206. 2

2886072207. 3

2886072208. 4

Question Number : 53 Question Id : 288607553 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In the context of textile structural composites, which of the following statements is not true :

- (A) Modulus of reinforcing structure is normally lower than that of the matrix
- (B) The matrix provides protection to reinforcing fibers against chemical attack and mechanical damage
- (C) Matrix provides rigidity and shape to the structure
- (D) Matrix is responsible for transferring load to the reinforcement

Options :

2886072209. 1

2886072210. 2

2886072211. 3

2886072212. 4

Question Number : 54 Question Id : 288607554 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Change in weave design to change number of cross over points per unit area of a multilayer 3D woven solid structure changes :

- (A) Impact energy absorption
- (B) Fabric thickness
- (C) Delamination resistance
- (D) In-plane shear resistance

Options :

2886072213. 1

2886072214. 2

2886072215. 3

2886072216. 4

Question Number : 55 Question Id : 288607555 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

3D woven Honeycomb structure is frequently used in the aircraft industry as a core of sandwich panel because :

- (A) It is a solid structure
- (B) It has excellent in-plane mechanical properties
- (C) It is an efficient impact attenuator
- (D) It is a ductile structure

Options :

2886072217. 1

2886072218. 2

2886072219. 3

2886072220. 4

Question Number : 56 Question Id : 288607556 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Projectile weaving technology is almost obsolete in terms of cost productivity ratio, However, it is still being used in certain application for its specialty as :

- (A) It is a robust machine
- (B) It is suitable for jacquard integration
- (C) Large width fabric can be produced on this machine
- (D) Very heavy weight fabrics can be produced on this machine

Options :

2886072221. 1

2886072222. 2

2886072223. 3

2886072224. 4

Question Number : 57 Question Id : 288607557 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Shuttle loom has reappeared in international market, because

- (A) Cost performance ratio is market conducive
- (B) Any complex structure can be produced on this machine
- (C) Shuttle speed has now increased because of use of electronic gadgets
- (D) It produces bound selvage and reduces waste for high performance expensive fibres

Options :

2886072225. 1

2886072226. 2

2886072227. 3

2886072228. 4

Question Number : 58 Question Id : 288607558 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Production speed of 3D weaving machine is substantially lower than 2D weaving machine, because :

- (A) 3D fabrics have very high crimp
- (B) 3D weaving introduces multiple picks per loom cycle
- (C) 3D looms are large width looms
- (D) Yarns are under very high tension in 3D weaving machine

Options :

2886072229. 1

2886072230. 2

2886072231. 3

2886072232. 4

Question Number : 59 Question Id : 288607559 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

For identical fibre volume fraction, modulus of 2D fabric reinforced composite is lower than that of 3D fabric reinforced composite , because

- (A) 2D fabric has more crimp in its constituent yarn than 3D fabric
- (B) 3D fabric has more number of cross over points than 2D fabric
- (C) 3D fabric has constituent yarns in thickness direction
- (D) Ultimate stress of 3D composite is larger than 2D fabric reinforced composite

Options :

2886072233. 1

2886072234. 2

2886072235. 3

2886072236. 4

Question Number : 60 Question Id : 288607560 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

For the same volume fraction of fibers in a composite

- (A) The area of the fiber–matrix interface is directly proportional to the diameter of the fiber
- (B) The area of the fiber–matrix interface is inversely proportional to the diameter of the fiber
- (C) The area of the fiber–matrix interface is inversely proportional to the length of the fiber
- (D) The area of the fiber–matrix interface is directly proportional to the form factor of the fiber cross section

Options :

2886072237. 1

2886072238. 2

2886072239. 3

2886072240. 4

Question Number : 61 Question Id : 288607561 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Process colours are used in

- (A) Batik printing
- (B) Discharge printing
- (C) Inkjet printing
- (D) Azoic printing

Options :

2886072241. 1

2886072242. 2

2886072243. 3

2886072244. 4

Question Number : 62 Question Id : 288607562 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Silk fabrics cannot be printed by

- (A) Pigment inks
- (B) Acid inks
- (C) Reactive inks
- (D) Disperse inks

Options :

2886072245. 1

2886072246. 2

2886072247. 3

2886072248. 4

Question Number : 63 Question Id : 288607563 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Thermal drop-on-demand technology is not suitable for

- (A) Pigment inks
- (B) Water based inks
- (C) Disperse inks
- (D) Acid inks

Options :

2886072249. 1

2886072250. 2

2886072251. 3

2886072252. 4

Question Number : 64 Question Id : 288607564 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The operating frequency of Continuous Inkjet technology is

- (A) Lower than that of Drop-on-demand
- (B) Higher than that of Drop-on-demand
- (C) Equal to that of Drop-on-demand
- (D) Higher or lower to that of Drop-on-demand based the nature of the ink being used for printing

Options :

2886072253. 1

2886072254. 2

2886072255. 3

2886072256. 4

Question Number : 65 Question Id : 288607565 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

For a 600 dpi resolution, the distance ( $\mu\text{m}$ ) between the center of the dots is approximately

- (A) 21
- (B) 42
- (C) 63
- (D) 84

Options :

2886072257. 1

2886072258. 2

2886072259. 3

2886072260. 4

Question Number : 66 Question Id : 288607566 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Number of firings required before formation of a stable drop is called

- (A) Priming
- (B) Latency
- (C) Instability
- (D) Jetting

Options :

2886072261. 1

2886072262. 2

2886072263. 3

2886072264. 4

Question Number : 67 Question Id : 288607567 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In the context of monochromatic digital printing, if the drop size is reduced keeping resolution the same, the perceived colour, as compared to the previous one will be

- (A) Lighter
- (B) Darker
- (C) The same
- (D) Lighter or darker based on the lighting condition

Options :

2886072265. 1

2886072266. 2

2886072267. 3

2886072268. 4

Question Number : 68 Question Id : 288607568 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In a 4x4 matrix resolution, the maximum number of grey levels that can be produced by a single colour is...

- (A) 15
- (B) 16
- (C) 17
- (D) 18

Options :

2886072269. 1

2886072270. 2

2886072271. 3

2886072272. 4

Question Number : 69 Question Id : 288607569 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

One inkjet printhead contains 200 nozzles. If each nozzle delivers 20 pL drop at 20000 drops per second, the ink consumed (L) by this printhead per minute is.....

- (A) 0.024
- (B) 0.048
- (C) 0.0024
- (D) 0.0048

Options :

2886072273. 1

2886072274. 2

2886072275. 3

2886072276. 4

Question Number : 70 Question Id : 288607570 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

The percent change in Reynold number ( $R_e$ ) on doubling both the printhead nozzle diameter and the velocity of the ink flow, will be .....

- (A) 100
- (B) 200
- (C) 300
- (D) 400

Options :

2886072277. 1

2886072278. 2

2886072279. 3

2886072280. 4

Question Number : 71 Question Id : 288607571 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Naturally occurring Quinone compounds are

- (A) aromatic ring with ketone groups
- (B) aromatic ring with carboxylic groups
- (C) aromatic ring with hydroxyl groups
- (D) aliphatic ring with ketone groups

Options :

2886072281. 1

2886072282. 2

2886072283. 3

2886072284. 4

Question Number : 72 Question Id : 288607572 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

For antimicrobial test of textile fabric, AATCC 100 is

- (A) qualitative test method
- (B) semi-quantitative test method
- (C) quantitate test method
- (D) not a test method for antimicrobial test

Options :

2886072285. 1

2886072286. 2

2886072287. 3

2886072288. 4

Question Number : 73 Question Id : 288607573 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Dissolved chitosan can be used in L-b-L coating of wool fibre because it contains.....in its structure

- (A) negative charge
- (B) zwitterion
- (C) no ionic charge
- (D) positive charge

Options :

2886072289. 1

2886072290. 2

2886072291. 3

2886072292. 4

Question Number : 74 Question Id : 288607574 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Lignin in flame retardant finishing of cotton

- (A) restricts oxygen access in combustion
- (B) transforms the cotton towards aromatized structure
- (C) transforms the cotton towards levoglucosan formation
- (D) enhances the pyrolysis temperature of cotton

Options :

2886072293. 1

2886072294. 2

2886072295. 3

2886072296. 4

Question Number : 75 Question Id : 288607575 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Major challenges in natural finishing of textiles are

- (A) requirement of higher add-on% as compared to synthetic chemicals
- (B) wash durability
- (C) both the requirement of higher add-on% and wash durability
- (D) natural agents cannot be attached with textiles

Options :

2886072297. 1

2886072298. 2

2886072299. 3

2886072300. 4

Question Number : 76 Question Id : 288607576 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

For chitosan nanoparticle formation by ionotropic gelation (for its enhanced antimicrobial activity)

- (A) all the  $-NH_2$  groups should be crosslinked
- (B) all the  $-NH_2$  groups should be free
- (C) majority of the  $-NH_2$  groups should be free
- (D) majority of the  $-NH_2$  groups should be crosslinked

Options :

2886072301. 1

2886072302. 2

2886072303. 3

2886072304. 4

Question Number : 77 Question Id : 288607577 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

For fire retardant cotton, the desirable by-products in pyrolysis

- (A) levoglucosan formation
- (B) non-flammable gases formation
- (C) flammable gases formation
- (D) none of the above

Options :

2886072305. 1

2886072306. 2

2886072307. 3

2886072308. 4

Question Number : 78 Question Id : 288607578 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

The chance of bacteria adhesion is maximum in case of

- (A) cellulose based fabrics
- (B) protein based fabrics
- (C) hydrophobic fabrics
- (D) hydrophilic fabrics

Options :

2886072309. 1

2886072310. 2

2886072311. 3

2886072312. 4

Question Number : 79 Question Id : 288607579 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Improved 'crease recovery angle' of cotton fabric can be measure of

- (A) fire retardant cotton
- (B) antimicrobial cotton
- (C) crosslinking of cotton
- (D) all of the above

Options :

2886072313. 1

2886072314. 2

2886072315. 3

2886072316. 4

Question Number : 80 Question Id : 288607580 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Halogen based compounds in fire retardant cotton

- (A) act in condensed phase
- (B) act in both gas and condensed phase
- (C) diverts the pyrolysis path
- (D) act in gas phase

Options :

2886072317. 1

2886072318. 2

2886072319. 3

2886072320. 4

Question Number : 81 Question Id : 288607581 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In ATR-FTIR

- (A) samples are subjected to visible light and IR are generated
- (B) IR are transmitted from one side of the sample and the signal is collected from the other side (i.e. transmission mode)
- (C) sample can be of various types such as fabric, film, paste or liquid
- (D) very large polished samples are required to achieve total internal reflection

Options :

2886072321. 1

2886072322. 2

2886072323. 3

2886072324. 4

Question Number : 82 Question Id : 288607582 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Full form of FTIR is

- (A) Fully transformed infra red
- (B) Free transmission intra red
- (C) Fourier transmitted infra red
- (D) Fourier transformed infra red

Options :

2886072325. 1

2886072326. 2

2886072327. 3

2886072328. 4

Question Number : 83 Question Id : 288607583 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Samples that are IR active

- (A) are polarizable and have a changing dipole moment
- (B) are only inorganic
- (C) do not vibrate at room temperature
- (D) can only be solid

Options :

2886072329. 1

2886072330. 2

2886072331. 3

2886072332. 4

Question Number : 84 Question Id : 288607584 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Raman spectroscopy is used to determine

- (A) chemical nature of the sample
- (B) crystal lattice structure of a crystalline sample
- (C) density of the sample
- (D) surface morphology of the sample

Options :

2886072333. 1

2886072334. 2

2886072335. 3

2886072336. 4

Question Number : 85 Question Id : 288607585 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Compounds that can be investigated using Raman

- (A) should have crystalline structure
- (B) should have polarisation that changes with vibration
- (C) should be water soluble
- (D) should be infra red inactive

Options :

2886072337. 1

2886072338. 2

2886072339. 3

2886072340. 4

Question Number : 86 Question Id : 288607586 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In XPS

- (A) electron beam is passed through the sample
- (B) x-ray beam is reflected and collected as the signal
- (C) electrons ejected by the incident x-ray beam are collected as signal
- (D) IR radiations are collected as signals

Options :

2886072341. 1

2886072342. 2

2886072343. 3

2886072344. 4

Question Number : 87 Question Id : 288607587 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

Another name of XPS is

- (A) ESCA- electron spectroscopy for chemical analysis
- (B) EPCA- electron photospectroscopy for chemical analysis
- (C) ESMA- Electron spectroscopy for mass analysis
- (D) EPPA- Electron photospectroscopy for particle analysis

Options :

2886072345. 1

2886072346. 2

2886072347. 3

2886072348. 4

Question Number : 88 Question Id : 288607588 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

EDS

- (A) can be used without an electron microscope or electron gun
- (B) identifies atomic percentage of different elements in a sample
- (C) uses IR beam to detect the atomic elements
- (D) is not useful for chemical analysis of a sample

Options :

2886072349. 1

2886072350. 2

2886072351. 3

2886072352. 4

Question Number : 89 Question Id : 288607589 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

SEM is

- (A) Scanning environmental microscope
- (B) Secondary electron microscope
- (C) Scanning electron microscope
- (D) Surface electron microscope

Options :

2886072353. 1

2886072354. 2

2886072355. 3

2886072356. 4

Question Number : 90 Question Id : 288607590 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

In SEM analysis

- (A) primary electrons hit the sample and secondary electrons are emitted
- (B) primary electrons are reflected from the surface to form an image
- (C) primary electrons are transmitted to form an image
- (D) x-rays hit the sample and secondary electrons are emitted

Options :

2886072357. 1

2886072358. 2

2886072359. 3

2886072360. 4

Question Number : 91 Question Id : 288607591 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The set of 16 inputs has the standard error of 2.40. The values of standard deviation and variance are approximately,

- (A) 6.9 and 47.6 respectively
- (B) 47.6 and 6.9 respectively
- (C) 92.2 and 9.6 respectively
- (D) 9.6 and 92.2 respectively

Options :

2886072361. 1

2886072362. 2

2886072363. 3

2886072364. 4

Question Number : 92 Question Id : 288607592 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

The Statistical sampling technique amongst the following is

- (A) Stratified sampling
- (B) Judgemental sampling
- (C) Asystematic sampling
- (D) Haphazard sampling

Options :

2886072365. 1

2886072366. 2

2886072367. 3

2886072368. 4

Question Number : 93 Question Id : 288607593 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Two yarn samples have standard deviation of strength  $\sigma_1$  and  $\sigma_2$ . If  $\sigma_1 < \sigma_2$ , the 'F' ratio would be

- (A)  $\sigma_1 / \sigma_2$
- (B)  $\sigma_2 / \sigma_1$
- (C)  $\sigma_2^2 / \sigma_1^2$
- (D)  $\sigma_1^2 / \sigma_2^2$

Options :

2886072369. 1

2886072370. 2

2886072371. 3

2886072372. 4

Question Number : 94 Question Id : 288607594 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

The 50% span length of cotton fibre is

- (A) lower in value than 2.5% span length
- (B) used to calculate the short fibre percent
- (C) used to calculate the Dispersion percent
- (D) used to calculate the Uniformity Index

Options :

2886072373. 1

2886072374. 2

2886072375. 3

2886072376. 4

Question Number : 95 Question Id : 288607595 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

With reference to KESF-1, the tensile resilience is given by

- (A) ratio of area under loading curve to area under recovery curve
- (B) ratio of area under recovery curve to area under loading curve
- (C) area under loading curve
- (D) area under recovery curve

Options :

2886072377. 1

2886072378. 2

2886072379. 3

2886072380. 4

Question Number : 96 Question Id : 288607596 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

50 % span length and 2.5 %span length are nearly equal to

- (A) Mean length and modal length respectively
- (B) Upper half mean length and Effective length respectively
- (C) Mean length and Upper half mean length respectively
- (D) Upper half mean length and mean length respectively

Options :

2886072381. 1

2886072382. 2

2886072383. 3

2886072384. 4

Question Number : 97 Question Id : 288607597 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

Standard error of the means (S.E.) of Yarn A is 12 and standard error of the means (S.E.) of Yarn B is 5, then standard error of the difference between the means (S.E. <sub>diff</sub>) will be,

- (A) 13
- (B) 15
- (C) 17
- (D) 19

Options :

2886072385. 1

2886072386. 2

2886072387. 3

2886072388. 4

Question Number : 98 Question Id : 288607598 Question Type : MCQ Option Shuffling : No

Correct Marks : 1 Wrong Marks : 0

A 60.5 tex yarn with CV % of 10 is produced from 5 dtex polyester fibre. The index of irregularity of yarn is approximately

- (A) 1.10
- (B) 1.21
- (C) 1.25
- (D) 1.31

Options :

2886072389. 1

2886072390. 2

2886072391. 3

2886072392. 4

Question Number : 99 Question Id : 288607599 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

FAST 1 measures the fabric characteristic related to

- (A) Bending
- (B) Compression
- (C) Tensile
- (D) Shear

Options :

2886072393. 1

2886072394. 2

2886072395. 3

2886072396. 4

Question Number : 100 Question Id : 288607600 Question Type : MCQ Option Shuffling : No  
Correct Marks : 1 Wrong Marks : 0

With reference to the guarded hot plate the correct statement is

- (A) Heat flows randomly in all directions around the test plate
- (B) The guard ring is left unheated and it merely provides insulation
- (C) The guard ring is heated to a higher temperature when compared to that of the bottom plate
- (D) The direction of heat is directed to pass only through the fabric sample

Options :

2886072397. 1

2886072398. 2

2886072399. 3

2886072400. 4